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CONTENTS

	PAGE
Editorial Notes	245
Railway Hotels and the Transport Industry	247
Canadian Railway Associations	248
Crewe Works Centenary	249
Letters to the Editor	250
The Scrap Heap	251
Overseas Railway Affairs	252
British-Built "Austerity" 2-8-0 Type Tender Locomotives	253
"Express" Traffic in North America	259
Railways of Portuguese East Africa	261
Carriage Cleaning on the Southern Railway	262
Personal	263
Transport Services and the War	265
Stock Market and Table	272

GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as indicating that they are available for export

NOTICE TO SUBSCRIBERS

Consequent on the paper rationing, new subscribers cannot be accepted until further notice. Any applications will be put on a waiting list and will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. The Railway Gazette *possesses the necessary permit and facilities for such dispatch.*

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

TO CALLERS AND TELEPHONERS

Until further notice our office hours are:
Mondays to Fridays 9.30 a.m. till 5.30 p.m.
The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

Railway Mission to Argentina

THREE directors of the British-owned Argentine railway companies are to go to Argentina shortly. They are Mr. J. M. Eddy, Chairman of the Buenos Ayres Great Southern Railway Co. Ltd., and Buenos Ayres Western Railway Limited, Lord Forres, a director of the Central Argentine Railway Limited, Buenos Ayres Western Railway Limited, and Buenos Ayres & Pacific Railway Co. Ltd., and Mr. H. C. Drayton, a director of the Buenos Ayres & Pacific Railway Co. Ltd., Central Argentine Railway Limited, and Buenos Ayres Great Southern Railway Co. Ltd. This move is obviously the outcome of the arrangements for an interchange of directors between the British-owned Argentine railway companies which were recorded in our August 27 issue. Mr. Eddy then joined the board of the Central Argentine Railway Limited, and Lord Forres became a director of the Buenos Ayres Western Railway Limited and the Buenos Ayres & Pacific Railway Co. Ltd.; Mr. H. C. Drayton joined the boards of the Central Argentine Railway Limited and of the Buenos Ayres Great Southern Railway Co. Ltd. Messages from Buenos Aires state that a Committee of the Active Forces of the National Economy has been formed; it consists of Presidents of the Buenos Aires Stock Exchange, the Argentine Rural Society, the Argentine Industrial Union, the Argentine Chamber of Commerce, and similar bodies. It has been asked by the Argentine Finance Minister to examine the question of profits of foreign-owned Argentine undertakings remitted abroad, which are subject to the basic income tax of 5 per cent., but to which supertax generally is not applied. This situation, the Minister states in his remit, constitutes an injustice to Argentine capital, which is taxed at a higher rate.

Railway Capital Expenditure

Expenditure on different kinds of railway works may be classified broadly into four groups, according to purpose. In the first are works to improve gross receipts, as an example of which may be cited the construction of third class sleeping cars in 1928, which contributed directly to increasing receipts from sleeping car fees from £178,500 in 1928 to £321,000 in 1938. In the second category are works designed to maintain gross receipts, and under this heading may be put the expenditure on new locomotives and improved signalling arrangements, which made possible the acceleration of train services before the war. The third group consists of works undertaken to enable receipts to be earned with less expenditure; examples are the standardisation of railway rolling stock and track circuiting. The fourth group consists of expenditure on amenities such as improvements in carriage design, undertaken primarily for the comfort and convenience of passengers. *The Times*, which has been dealing in its City Notes with various types of railway expenditure on capital works, and the possibility of timing it so as to promote employment, points out that the last type of expenditure is probably that which could be brought forward or postponed to accord with policy. Nevertheless, it is just this type of expenditure which must be least easy for management to justify when trade depression threatens.

The Centenary of "The Economist"

With the current issue *The Economist* has reached its one-hundredth year of weekly publication, and during that time no issue has failed to make its appearance. The journal, which was first published on September 2, 1843, was started frankly as an organ of propaganda by James Wilson in the anti-Corn Law campaign. Since then, without diminution of its independence of thought and forthrightness of expression, it has attained a wide influence, and it has never wavered from its conviction of the compelling power of personal liberty in both politics and economics. Since 1843 the greater part of the national transport system of this country has been built, British industry has undergone a great expansion, and the field covered by *The Economist* has similarly widened many times. *The Railway Gazette*, the oldest constituent of which was born some eight years before *The Economist*, joins in the congratulations and good wishes to *The Economist*, which were given public expression at a luncheon at which the Chancellor of the Exchequer, the Governor of the Bank of England, and Secretary of State for Home Affairs spoke last week.

Fuel Utilisation in the Future

One of the results of the fuel efficiency campaign is that increasing attention is being given to the scientific possibilities of energy production and utilisation, as distinct from conventional practice. There is a big gap, for instance, between the temperature obtainable by the combustion of coal and that which can be utilised by steam as a working fluid. Exhaust steam, too, contains the bulk of the heat energy delivered by a boiler; condensers are essentially means to dissipate rejected

and wasted heat. Manufacturing processes often require heat at specific temperatures and present methods generally sacrifice the whole of the lower-grade heat in the steam or other medium provided for the purpose. The basis of much heat/power practice is being re-surveyed and future methods may involve considerable re-orientation of our ideas. Chemical derivatives of coal are taking on a new importance; possibly power may become the byproduct instead of the main object in the utilisation of fuel, and the gas-making industry may acquire a predominant status through the development of a practicable gas turbine. Some of the best brains in this country and overseas are working on these problems, the future solution of which may have vital repercussions, affecting industry and transport in Great Britain, because of our valuable indigenous coal endowment.

Railways in Portuguese East Africa

Signs are not wanting that the Portuguese Government is fully alive to the importance of developing railway and other means of communication in its East African territory, the east to west routes across which form a means of access from ports on the Indian Ocean to the Tranvsaal, Rhodesia, and Nyasaland. Delagoa Bay is only 55 miles from the Transvaal border, and, as long ago as the time of the Great Trek, efforts were made to set up an ox wagon service to the new Boer settlements. Such a service was run for a time, but not till 1895 was there a railway to Pretoria from Lourenço Marques. The second important undertaking was the British-owned line from Beira to Rhodesia, opened in 1899. About 12 years ago the Portuguese authorities began the construction of lines intended to open up other parts of the country, which contains many material resources, that in recent years a British geologist has been employed to investigate. The present lines form isolated systems, connected by road and air services, but will no doubt eventually be joined. It is intended to develop a new port at Nacala, not far from Mozambique, the route inland from which now reaches to beyond Mutuali, 273 miles, and is being continued past the Lurio River. This includes the 200-ft. bridge on the Vierendeel system over the Malema river. Work is actually proceeding also on the so-called Tete line, of which some 40 miles are completed, to connect the Beira route with the north-west border of the country; Tete itself is on a branch. All the evidence shows that these lines are being substantially built and equipped. (*See article and map, page* 260.)

Introduction of Platform Tickets in Great Britain

Just 30 years ago a live topic in both the technical and the general press in this country was the introduction of platform tickets in Great Britain. They had been used for many years on the European continent, and on the Prussian State Railways alone the earnings from platform tickets averaged £350,000 annually. Previous attempts had been made in Great Britain, notably by the North Eastern Railway, and in some instances their issue without charge was practised. However, the system had never been extended systematically, and the "open" station was the general British practice, with incoming main-line trains being stopped for ticket collection at a station or platform before the terminus. The first stations to be "closed" and fitted with platform ticket-issuing machines, in July, 1912, were Taunton, Wellington, and Wolverhampton, and a month later similar machines were placed at Reading, Bath, Stafford, Bangor, and Warrington. The G.W.R. and the L.N.W.R. were thus the pioneers. An important and somewhat severe test of the system was the "closing" of Victoria Station, Manchester, by the Lancashire & Yorkshire Railway Company on March 3, 1913, and this provoked extended press references. The issue at Waterloo, L.S.W.R., began in May, 1913. Of course, the collection of 1d. was not the primary object. From the railway viewpoint the operating improvement was the exclusion of idlers from the platforms and the establishment of some control over anyone occupying platform space.

Why Southern Railway Carriage Stock is Clean

The cleanliness of the Southern Railway coaching stock, which has been maintained at a very high level notwithstanding wartime difficulties, has attracted favourable comment from many of the company's patrons. The fact that the line is so largely electrified is one of the reasons for the greater cleanliness, both internally and externally, of the stock. Many will recall the very different conditions which prevailed when steam trains used the Penge Tunnel. Two other factors which help to maintain the external cleanliness of Southern Railway trains are the practice of treating the exteriors of the coaches by a chemical preparation, which loosens congealed grime, and the frequent use of the ten coach washing plants operated by the company. Some details of the methods employed are given in an article on page 262. Maximum cleanliness, of course, would be secured by keeping under cover stock not in use, but this is not always practicable. The high standard of cleanliness which characterised the rolling stock of the old Midland Railway was the result of a policy of not allowing coaches and so forth to remain in the open when out of service. On the Southern Railway, uniformity of stock is secured by the practice of keeping trains in block sets, and not breaking up trains and dispersing individual coaches.

Wartime Permanent Way Labour Problems

Most countries appear to have their railway labour problems and not the least acute of the latter are in the United States. Munitions wages are attracting permanent-way gangmen away from the railways in large numbers, and at the same time it is considered necessary to strengthen the track labour force substantially to keep pace with increased traffic and other wartime conditions. It is the extra gang labour rather than the ordinary maintenance gangs that are mainly affected. One expedient to meet the competitive wages problem is to employ the gangs for longer hours, a practice often preferred by men working away from their homes for considerable periods and housed in specially equipped cars. In certain cases, where it is necessary, special permission to waive State laws has been granted to enable youths of 16 and 17 to be employed. Recruiting tours of high schools have been inaugurated, resulting in large numbers of lads volunteering to spend their summer vacations on the permanent way. Though naturally not so efficient as experienced men, these youngsters are reported to be working very well. On the other hand, over-age men are now being employed in considerable numbers with, however, very much less success, even though many of these men are little more than 45, the normal age limit. Week-end and other part-time labour is also proving useful.

United Railways of Havana

The recent announcement from Havana that the United States is to buy over 4,000,000 tons of sugar from Cuba next year holds promise of better traffics and an improvement in the finances of the United Railways of Havana which, in recent years, have been at a low ebb. Sugar is the main item of traffic on this line, and in the year 1941-42 the considerable purchases which the United States had already made enabled the company to make a net profit for the first time since 1936-37. From 1930 until a year or so ago, the Cuban sugar output was greatly depressed, both because of general world conditions and the development of sugar beet in the United States and Europe. The United Railways of Havana are owned and leased by United Railways of the Havana & Regla Warehouses Limited, an English undertaking which was incorporated in February, 1898. Its system serves the whole of the western and central parts of the island of Cuba, and includes the port of Havana whence a train ferry works to Florida. The railways have suffered from rising operating expenses and debenture interest is in arrears.

U.S. Railways Study Post-War Problems

Last year the directors of the Association of American Railroads organised a body which is now known as the Railroad Committee for the Study of Transportation and which is engaged on studies designed to furnish the railways with dependable information as to probable post-war conditions. Mr. Roy B. White, President of the Baltimore & Ohio Railroad, explained recently that the committee consists of 46 members and represents a fair cross-section of the American railway industry. It has created a number of sub-committees, which are working on such subjects as railbed consolidation, engineering and mechanical research, financial problems, labour and personnel matters, motor, air, water, and pipe line transport, taxation, traffic, public relations, accounting and statistics, legislation, and the probable post-war economic situation. The sub-committee dealing with the last-named is contacting industry so that it may form an intelligent opinion as to the probable amount of traffic which would be available for all transport agencies, and the extent to which it is likely to be distributed among them. Nearly forty classes of commodities are being studied with an attention to detail which rarely has been employed hitherto.

Employment of Gangwomen in America

In and around terminal yards in the U.S.A., it has been found not only feasible but also usually satisfactory to employ women in the permanent-way gangs. As a rule 6 to 10 women have been employed with 3 or 4 men and a foreman to form a gang. The men do the heavier work, and in general the women can be considered to be only about 50 per cent. as efficient as men. Though the women earn the same wages as the men, the men in the mixed gangs, who are usually middle aged, are reported as generally willing to accept the division of work cheer-

fully. White women of middle age have proved most satisfactory; the younger ones do not stay long. With coloured women the opposite has been found to be the case. Portable toilets are provided on the work for the use of women in mixed gangs. One of the greatest problems connected with the employment of women has been the education of the foremen to train and employ the women effectively. Experience has varied considerably in the employment of women in different places and conditions, but there is always a certain amount of work that they can do efficiently, and by careful selection, good supervision, and proper training, it is believed that quite a reasonable percentage of track work can be done satisfactorily by women employees.

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Cylinder Ports and Clearance Volume

The requirements for increased power and increased speeds have both served to accentuate such time-honoured difficulties of the locomotive designer as are bound up with the sufficiently rapid admission of steam to cylinders and the provision of a free exhaust. The tendency has been to increase the ratio of port to piston area, but there is a limit to the improvement that can be effected in this direction because increased port area usually necessitates increased clearance volume, which in turn leads to additional steam wastage. The problem of providing adequate port areas has been intensified by the need for larger cylinders and the present tendency seems to be to call a halt in the growth of cylinders and to meet fresh power requirements by augmenting boiler pressure, or using more cylinders than two, or both. According to a recent paper on steam distribution by Mr. Walter Smith of the Pilliod Company it was, until recently, common American practice to provide ports having an area as nearly as possible 9 per cent. of the piston area. In later engines using higher pressures and smaller cylinders this figure has risen to 11 or 12 per cent. It is not claimed that there is any uniformity in this respect but 10 per cent. is put forward as the prevailing rule. For exhaust passages a figure of 11 to 12 per cent. is given as satisfactory. Though no mention is made of the ratio of area to periphery for ports, it can be assumed that here also a high figure is preferable to a low one.

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Record Performances by Veterans

It is a curious fact, but one for which ample proof exists, that many locomotive classes, in their later years, exhibit powers of haulage that were barely dreamed of when they were new. A striking transformation of this kind was in the work of the Ivatt Atlantics of the late Great Northern Railway, which in their first five years or so, from 1902 onwards, were indifferent performers, and bad timekeepers with any loads much exceeding 300 tons; yet by 1936 we have the feat of No. 4404, which took over at Grantham, from a Pacific which had run hot, a 17-coach train of 585 tons gross weight, and ran the 82·7 miles to York in 87¾ min., or less than the schedule time of 90 min. What is more, the latter compared with the 97 min. allowed the same train from 1902 to 1914, when these engines were new. A "Lord Nelson" 4-6-0 of the Southern Railway, called on to handle from Salisbury to Waterloo one of the 16-coach trains normally allotted to the "Merchant Navy" Pacifics, recently ran the 42 miles from Andover to Woking in 44 min. 22 sec. start-to-stop with this 570-ton train, and from Hook to Farnborough maintained from 81 to 75 m.p.h. continuously on practically level track, and averaged 76·2 m.p.h. over the 22·3 miles from Worting Junction to Brookwood. Such a performance would have been well-nigh impossible with a "Lord Nelson" in its original condition, but redesign of the front end, and the Lemaître exhaust in particular, have made all the difference.

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The Student

It is always a pleasure to us to meet others who delight in the study of railways, and so a recent journey in the company of a Royal Air Force warrant officer who admitted to such an enthusiasm remains in our memory. It seemed that this man would often slip away from the busy life of the camp after duty hours to enjoy the sights and sounds of the local railway station, and that he looked forward to a retirement, far removed from parade grounds and barrack huts, which he would devote to the study of a giant volume on railways, acquired from a second-hand bookstall in Torquay. We pressed him for details of the work, but as he was reserving the study of it for the evening of his days he had as yet barely dipped within, nor could he remember the title. We asked if it was a large book, and he waved his hands to indicate an almost unbelievable bulk. Was it illustrated? Again the expansive gesture, indicating unheard of pictorial wealth. On this evidence we have ransacked our store of railway bibliographical knowledge and are forced to no other conclusion than that our friend had come into possession of a pre-war bound volume of *The Railway Gazette*.

Railway Hotels and the Transport Industry

IN a recent editorial article* the relationship between transport and catering policy was discussed, and the scope for development of holiday and tourist catering, particularly of the more popular variety, was explored. It was shown that catering is likely to have an increasingly important effect on transport after the war, and that the railways were probably the world's largest caterers. They own 53 hotels, over 300 refreshment rooms, and they normally provide 910 restaurant car services. In peacetime over 150,000,000 customers a year are served, and their annual gross receipts from this source are over £6,000,000. Obviously therefore, they are directly interested in the future development of the British hotel industry. Two major points which have to be considered in connection with development in this industry are: (1) the national interest; and (2) the form development should take, having regard to (*a*) hotel development in the past, with special reference to railway hotels; and (*b*) the position of the privately-owned individual hotel operated purely for profit.

It is widely expected, and there seems little reason to doubt the accuracy of the forecast, that there will be a very large increase in tourism after the war. The habit of travel was increasing rapidly for some years before September, 1939, means of accommodation were being improved, transport developments throughout the war, when applied to peacetime purposes, should have a further stimulus to this tendency, and increased international co-operation, both diplomatic and commercial, will call for a high level of first class accommodation. It may be said that by foreign visitors a country is often judged largely on its standard of hotel service, and it is obvious that a well-organised and flourishing tourist traffic constitutes a valuable form of invisible export.

Experience has shown that hotels which are part of a large organisation, in general, can provide a better and higher all-round level of efficiency, than can be afforded by individual ownership with differing managements and varying standards of service and comfort. Obviously, the greater resources which are at the disposal of a large organisation make this easier of achievement, and it has been shown in the case of the railways that in this way it is possible to develop resort and business hotels which have a guaranteed standard of comfort and service. This service, despite fluctuations in business, is consistently maintained.

Broadly, hotels may be divided into two classes: (*a*) resort hotels, and (*b*) business hotels. The former have a comparatively short season, which varies according to their location. It is essential that they should offer a very high degree of comfort and service, because they are in competition with the best provided by other countries, many of which have devoted considerably greater attention to the development of a tourist industry than has been the case in Great Britain. Business hotels, on the other hand, have to aim at being the business and social centre of the town in which they are placed. This will be increasingly important after the war, in view of the improved international communications which will, no doubt, result in a greater interchange of business and diplomatic representatives. This will emphasise the primary need in all centres of commerce and industry for a hotel centre which can provide for both the business and recreational needs of those visitors and also for the community of the towns.

In the past century, from the opening of the Euston Dormitories (now Euston Hotel) to Queen's Hotel in Leeds, 1937, the railways have been a major factor in the expansion of hotel business, both for resorts and for business purposes. A number of railway resort hotels, such as those at St. Ives, Stratford, Gleneagles, Turnberry, Cruden Bay, Dornoch, and so on, provide the high standard of comfort and service which is required to compete with hotels in other countries. Others in important provincial cities and towns have become well-known business and social centres. Among these may be cited hotels at Birmingham, Liverpool, Manchester, Leeds, Bradford, York, Newcastle, Edinburgh, and Glasgow. Not only do these hotels provide adequate accommodation for business and social purposes, but they have added to the prestige of the cities and towns in which they are situated. The position of the privately-owned individual hotel is very different from that of one which is a unit in a cohesive organisation. The standard of comfort and service maintained by a single hotel, operated purely as a money-making concern, is necessarily dependent on a number of relatively uncontrollable factors. Primarily, it must stand alone economically, and this may have the result that financial considerations conflict with the standard of service and comfort, the former must take priority if a hotel is to remain open. Furthermore, in contra-distinction to railway-owned hotels, under a central management, which conform to a given standard, ideas on what may constitute a "standard" may vary considerably between one individual hotel manager and another. With a few exceptions, the privately-owned hotel proprietors in past years have not shown

* "Transport and Catering Policy," *The Railway Gazette*, August 27, page 200

that they are capable of producing a standard of comfort and service that is comparable with that given by railway-owned hotels, and lags sadly behind that found in similar hotels on the continent.

The results of a survey of the hotel position in this country, lead inevitably to the conclusion that, to meet post-war needs, the provision of adequate hotel accommodation cannot be left satisfactorily to the private enterprise on a small scale. Indeed, it may be said that in view of post-war national needs, the provision of hotel accommodation is a matter of wider aspect than that of solely or even primarily benefiting an individual who has invested his capital. On the contrary, the greater benefit should ensue to the nation and to the locality in which the hotel is situated. Although hotel development on the railways to some extent has been influenced necessarily by traffic considerations, the general policy has coincided, as it has in many other spheres with the national interest, and this national interest has been and will continue to be enlarged by the great increase in road and air travel, which will be a marked feature of the post-war period. It must not be overlooked, moreover, that the great demand for hotel accommodation will arise immediately after the war, and in this connection it is to be remembered that many railway-owned hotels have been requisitioned. Their early release is essential if they are to play their full part in post-war rehabilitation of the nation.

As we have seen, outside the Capital, nearly all the best known hotels are owned by the railways, and the time has now arrived to give careful consideration to the problem as to what agency, under post-war conditions, is to continue the good work which has been done by the railways. Necessarily, to some extent, the answer must be dependent on the relationship between the railways and the Government. It is clear, however, that the railways, or their successors, must in the interest of the nation, continue the tradition which they have established, or the obligation must be carried by some other authority, which is willing and qualified to carry on the work.

The hotels of the Continent may well be ready to cope with tourist business long before our own in this country have been reconditioned, or, in a number of cases, rebuilt. The problem is therefore urgent, unless we are content once again to be faced with the fact that innumerable transatlantic visitors prefer to land at a continental port rather than endure the very second-class service of the majority of British hotels.

Canadian Railway Associations

IN recent years such a preponderating position in Canadian transport has been occupied by the privately-owned Canadian Pacific Railway and the Government-owned Canadian National Railways that it is apt to be overlooked, outside North America, that there are still some other railways in the Dominion; that water transport is not unimportant; and that certain electric railways occupy the positions of main lines. Canada, therefore, makes use of associations to provide the necessary liaison between the various operators, in a similar way to many other countries.

The two principal bodies at the present time are the Canadian Passenger Association and the Railway Association of Canada. The Canadian Passenger Association has been in existence since 1905, and is the older of the two organisations. Its constitution was revised in January, 1924, when it was specified that its activities covered the whole of the Dominion of Canada, but divided the territory into two sections known respectively as Eastern Lines and Western Lines. The former includes Fort William and Armstrong (both in Ontario) and all the territory east thereof. The latter deals with the territory west of Fort William and Armstrong. There is an advisory committee consisting of three members with jurisdiction over the entire territory of the association. In addition, there are four committees, respectively, the executive committee, the rules committee, the baggage car traffic committee, and the publicity committee, which exist in duplicate, dealing respectively with Eastern Lines and Western Lines. With the executive, rules, and baggage car traffic committees, the Eastern Lines committees consist of a Chairman and three members, and the Western Lines committees of the Chairman and two members. The publicity committees consist of the Chairman and two members in each case. All steam transport (rail and water) lines, and electric transport lines having traffic relations with such steam transport lines as are members of the association, may be admitted to membership by consent of operators who are already members. The purposes of the organisation are to enable the parties to confer and act together in matters relating to the preparation and issue of tariffs and ticket regulations, and to assist in securing compliance with the laws regulating commerce.

The Canadian Railway Association for National Defence was formed at a convention of executives of the railways of Canada on October 23, 1917, at the suggestion of the Dominion Government, with a view to co-ordinating the activities of the various railways (then more numerous than now) in order to secure the maximum degree of efficiency in handling troops, war supplies, and essential domestic traffic, and in conserving fuel, motive power, and manpower. Shortly afterwards, the name of this association was changed to that of the Canadian Railway War Board. On November 8, 1919, a further conference of steam railways operating in Canada was held, at which it was decided that the work of the Canadian Railway War Board had proved of such value to the railways and to the transport requirements of the country that a permanent organisation should be established under the name of the Railway Association of Canada. The constitution adopted at that meeting defined the purposes of the association as "consideration of and recommendation upon matters pertaining to the operation of steam railways in the Dominion of Canada; to make such representations to the Government of Canada, the Board of Transport Commissioners for Canada, or to such other public bodies or other railway associations as in the opinion of the association may be desirable in matters of common interest to member companies; and to act on behalf of member railways, either jointly or severally, as may be authorised, as the executive committee may from time to time approve."

The membership of the Railway Association of Canada consists of carriers which operate steam railways in Canada, subject to the proviso that no carrier operating fewer than 50 miles of railway (including running powers), or which operates primarily as a "plant facility," shall be eligible for membership. The voting rights of the members are based upon the mileage of railway operated. Provision is made for the admission by the executive committee of the association, as associate members, of those carriers which are not eligible for full membership. The principal governing body of the association is an executive committee consisting of five members (one of whom must be the President of the association), who are elected at a regular session of the association to serve for three years. Every member of the executive committee is required to be the President of a Canadian railway. It is the duty of the executive committee to direct the general policy of the association, to deal with recommendations and reports of committees, and, if approved, to authorise the completion of such arrangements or agreements as these committees may recommend. The President is required to attend all regular sessions of the association. There are also operating, traffic, financial, and legal committees, each of which consists of five members selected by the member railways. Each of these committees has a Chairman and Vice-Chairman, who are elected by a majority vote of the members present at a meeting, and hold office for one year. It is the duty of the operating, traffic, financial, and legal committees to exercise general supervision over those features of the association's work which are generally recognised as coming within the jurisdiction of the department of railway organisation which corresponds to the respective committees; to make recommendations and reports to, and to give effect to instructions received from, the executive committee; to appoint such sub-committees or sections as may be considered necessary to the prompt and efficient handling of the work of the association, and to consider reports and recommendations of, and to direct the activities of, sub-committees. It will thus be seen that the functions of the Railway Association of Canada have many points of similarity with the activities of the various committees of the Railway Clearing House in Great Britain.

Ministry of Supply "Austerity" Locomotives

IF we remember rightly it was the *Daily Express* when publishing in 1942 a picture of the Southern Railway's "Q1" goods engine that first used the word "austerity" in describing a locomotive. Since then the adjective "austerity" has been officially recognised and applied to the general utility engines built by British and American locomotive builders to the order of the Ministry of Supply for service in this country and overseas. A preliminary description of the British-built "austerity 2-8-0 type tender locomotives" was published in *The Railway Gazette* for November 20, 1942, and in this issue by courtesy of the Ministry of Supply, we publish a more detailed description, together with a general arrangement drawing.

Within less than a year of its commencement on the drawing board, the Ministry of Supply "austerity" locomotive has made its appearance on our main-line railways in considerable numbers. Already the completed total runs into three figures and the weekly production rate is now higher than anything hitherto achieved in British locomotive manufacture. Operating results have indicated that the engine is more than adequate for the work it has to do; it possesses reserves which will doubtless be called upon when the "lines behind the lines" have to contribute that final all-out effort necessary to the achievement of decisive victory.

In general appearance and proportions the design conforms closely to the standards usually adopted in this country for the

2-8-0 type of locomotive; it is simple and robust and can therefore be relied on to give long-mileage trouble-free service at a low maintenance cost. The planning of the locomotive and the task of seeing it through the constructional stages and into traffic in the shortest possible time rested with the Ministry of Supply whose officers responsible for the undertaking have shown acumen and skill in their selection of the details, covering dimensions, materials to be used, and methods of assembly, so that economy in time, labour, and cost of producing the engines should be brought within the narrowest limits that are reasonable and, indeed, possible.

As things are now, very careful and judicious note has to be taken of availability of materials, simplification of manufacturing methods, and matters of that kind, and a reading of the article starting on p. 253 of this issue will show how this none-too-easy task has been accomplished in the present case. Criticism of the design and its proportions there may be. But numbers of "austerity" engines are already giving as good an account of themselves as any other two-cylinder 2-8-0 locomotives in service on British railways and they have certainly proved efficacious for the work which they are called on to perform. Simplicity of detail is the keynote of the design and it would, we think, be difficult to produce an engine of this size and power on a less complicated basis, coming within the limits of size and weight here demonstrated.

The engines it is understood, are being built primarily to meet war conditions but their retention in service after the cessation of hostilities is a possibility which, in view of the general characteristics of the design, would appear to be almost certain. In the meantime there can be no doubt of their utility or of the reception that will be given to them by railways that have for so long had to carry increasing traffics with decreasing motive-power equipment.

Trans-Australian Track

UNTIL the completion by the Commonwealth Government of the Trans-Australian Railway, in the latter part of the last war, Western Australia had no rail communication with any other one of the Australian States. The 1,108 miles of standard 4 ft. 8½ in.-gauge track between Port Augusta and Kalgoorlie was completed in October, 1917, and provided a connecting link which has since proved of very considerable commercial, and latterly strategic, importance; reference to its wartime activities was made at page 566 of our June 4 issue. The average life of Australian hardwood sleepers is in the vicinity of 20 years, and the number of sleepers renewed, and the percentage of renewals, were comparatively slight during the period of nearly 17 years up to the conclusion of the financial year ended June 30, 1934, as shown in the following table:—

	Jarrah	Karri	Tasmanian Stringy Bark	Total
October, 1917, to June 30, 1934...	165,561	13,501	64,705	243,767
Percentage renewed	8·51	3·3	71·45	9·97

After that time, however, extensive renewals have had to be undertaken, and figures for the last eight financial years are as follows:—

	Jarrah	Karri	Tasmanian Stringy Bark	Total
During 1934-35	311,768	23,589	14,420	349,777
During 1935-36	193,120	15,937	—	209,057
During 1936-37	227,137	21,027	—	248,164
During 1937-38	138,369	23,178	—	161,547
During 1938-39	172,252	17,622	—	189,874
During 1939-40	113,777	53,400	11,433	178,610
During 1940-41	63,146	80,755	—	143,901
During 1941-42	130,724	22,979	—	153,703
Total renewed to June 30, 1942...	1,515,854	271,988	90,558	1,878,400
Approximate number of sleepers originally in main line and sidings, Port Augusta to Kalgoorlie	1,945,140	480,597	90,558	2,444,295
Percentage renewed	77·93	66·56	100	76·85
Average age of sleepers removed from road (years)	22·45	23·57	12·59	—

The 1942-43 programme provides for an additional 200,000 sleepers to be renewed. The standard section of ballast (6 in.), originally decided on, does not provide the depth of road-bed required for present-day loads and speeds of trains on certain curves and portions of the line where sand and other unstable formation exists. Further quantities of ballast have accordingly been obtained, so that action may be taken to increase the stability of the road-bed. A contract placed during 1940-41 for the supply of 55,000 cu. yd. of crushed stone from a quarry near Tarcoola was completed during December, 1941. Of this quantity, approximately 40,000 cu. yd. were distributed on the track, and the balance (15,000 cu. yd.) was stacked alongside the line in the vicinity of the quarry. The latter, with other reserves of stone, will be absorbed where experience proves additional ballast is most necessary.

In order partly to combat the considerable difficulties experienced in obtaining labour, the hours of working of track forces engaged on the maintenance of the Trans-Australian Railway were increased from December 15, 1941, by 45 minutes a day beyond the regular working hours, and annual leave was restricted. A certain measure of relief has also been obtained by the employment of a certain number of prisoners of war on resleepering work. By reason of shortage of manpower and difficulty in obtaining material, work which should have been undertaken in the ordinary course of events during the past two financial years, in order to maintain the permanent way, buildings, etc., to the recognised standard, has had to be deferred, and maintenance expenditure which it was impracticable to incur during these two financial years totalled approximately £95,000 on the Trans-Australian Railway. With the concurrence of the Department of the Treasury, a reserve account has accordingly been established to cover the liability in future years.

During January and the early part of February, 1942, exceptionally heavy rains fell at the western end of the line, damaging and softening the track at numerous places, mainly between Loongana (337 miles from Kalgoorlie) and a point 120 miles westward thereof. At Rawlinna (235 miles from Kalgoorlie) no fewer than 4 in. were recorded on January 6-7 of last year, and a further 3 in. on January 29. As the annual rainfall averages only 6 in. in these parts, the extent of the falls will be appreciated. Numbers of trains were delayed and in three instances east-bound passengers and mails had to be transferred to west-bound trains, and *vice versa*, at an extensive break in the road a few miles west of Rawlinna. In the report of Commonwealth Railways operations for the year ended June 30, 1941, it was intimated that work had been taken in hand in order to place the railway in a position of preparedness to afford increased transport services; these works have since been completed, happily in time to be available to assist in handling the heavy extra traffics occasioned by the entry of Japan into the war. The works include additional crossing loops and extensions, increased water and coal storage facilities, the installation of water treatment plants, the reconditioning of locomotives and rolling stock, and the provision of additional rest-house accommodation. For security reasons, precise information has not been published about the extent of traffic which the Trans-Australian Railway is at present being called upon to carry. It is stated, however, that the quantity of through goods traffic during the financial year 1941-42 was no less than 102 per cent. in excess of the tonnages transported in the previous year, and 270 per cent. above those for the year 1939-40.

Crewe Works Centenary

ON September 2 Crewe Works, with due "austerity" celebrated its centenary; the L.M.S.R. Chairman, Sir Thomas Royden, and Mr. C. E. Fairburn, Acting Mechanical Engineer & Electrical Engineer, attended the ceremony. The Grand Junction Railway, whose works had been located at Edgehill, Liverpool, started a works at Crewe in 1843 and there undertook the building of its own locomotives shortly before the formation of the L.N.W.R. in 1846. The following is a list of Crewe Locomotive Superintendents and C.M.Es.

CREWE LOCOMOTIVE SUPERINTENDENTS AND C.M.Es.

Grand Junction Railway (Crewe)	
Francis Trevithick	1843–1846
L.N.W.R. Northern Division (Crewe)	
Francis Trevithick	1846–1857
John Ramsbottom	1857–1862
Entire L.N.W.R. System	
John Ramsbottom	1862–1871
Francis William Webb	1871–1903
George Whale	1903–1909
Charles John Bowen-Cooke	1909–1920
Captain Hewitt Pearson Montague Beames	1920–1921
George Hughes	1922
Entire L.M.S.R. System	
George Hughes	1923–1925
Sir Henry Fowler	1925–1931
Sir William Stanier	1932–

In 1846 the Grand Junction Railway locomotives maintained at Crewe numbered 72, weighing about 12½ tons each. Today the L.M.S.R. owns some 7,600 engines, of which 2,540 are maintained at Crewe and the subsidiary works at Rugby. In past years, particularly in Webb's regime, Crewe had a great reputation as a training centre for would-be locomotive engineers who "served their time" as premium apprentices or pupils. Except in war periods the reunion dinner of "Crewe men" has been a largely attended annual function. After the formation of the L.M.S.R. in 1923, the works were entirely reorganised.*

* "*Reorganisation of Crewe Locomotive Works.*" *The Railway Engineer* 33, Tothill Street, London, S.W.1. Price 15s. 7d. post free.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Herapath's Railway Magazine

Irish Railway Clearing House,
5, Kildare Street,
Dublin, C.17. August 28

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—With reference to the paragraph in the "Scrap Heap" of *The Railway Gazette*, August 6, 1943, relative to *Herapath's Railway Magazine and Commercial Journal*, it may be of interest to you to hear that we have in our possession in the Irish Railway Clearing House volumes of the *Journal* (Quarto Series) dating from the year 1840 onwards. For the year 1840, however, several of the numbers are missing.

It might also be interesting to hear that it was only as from March 28, 1840, that the words "by J. Herapath, Esq." were introduced in the title of the *Journal*.

Yours truly,
S. MASON,
Secretary

The Charging of Merchandise Traffic of 3 Cwt. and Under

August 28

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Those who are conversant with the present system of calculating the carriage charges on merchandise traffic must agree that the method now obtaining of determining the charge of "small" consignments of 3 cwt. and under is far too cumbersome and too involved to comply with modern transport conditions and is certainly unsuited for present-day requirements.

When one considers the wartime measures which have already been introduced and the concessions which the railway companies have made in other directions, it is difficult to understand why it should still be thought essential to have in force such a variety of rates for the purpose of calculating a charge of a few shillings on one or two packages weighing two or three hundredweights, when the difference in the charge for conveying "small" consignments of various classes of traffic amounts only to a few pence.

In raising the subject, let me say at the very outset that I am fully aware that the present method was the outcome of the 1921 Act and that I am fully cognizant of the legislative restrictions and various statutory enactments in regard to rates and charges, but I feel that now the railways are Government controlled, a simplified method of arriving at the charge on "smalls" traffic is desirable and could be put into operation immediately without the fear that this action would give undue preference to or prejudice any class of users of the railways.

For many years the principle on which the carriage of merchandise has been estimated has been dependent on the description of the goods—the weight of the consignment—and the distance it has to be carried. Consideration is also given to the bulk in comparison to the weight, the risk of damage and the cost of handling. Additional charges have also to be made in respect to handling and dealing with the goods at the forwarding and receiving points. Undoubtedly this principle has its advantages, and it must be admitted that as there are many different kinds of goods, the expense of carrying large quantities of merchandise of different bulk and weight would vary considerably, but can it be argued that this variation in small consignments of 3 cwt. and under is apparent enough to justify the existence of nine standard rates, Classes 12 to 20 (not counting Class 21 or any special rates)?

The continued existence of the nine rates for "smalls" traffic means that every consignment handed to the railway companies for despatch, should it weigh anything between 28 lb. and 336 lb., must be brought under one of the nine classes before the charge can be determined. This, however, is not all, as the standard rates are subjected to alteration by the addition of a charge for "collection only," "delivered only" or "collection and delivery." It thus follows, that, even if special rates are excluded, nearly every station has at least twenty-seven sets of figures upon which to calculate the charge for conveying 3 cwt. of traffic to practically every other station on the railway companies' system, and at least thirty-six rates for "smalls" traffic for a London station or a station on the Southern Railway Company's system where the charge for the service of cartage varies. This is not all, because after the charge for carriage has been determined from the "smalls" scale, the amount is subjected to penny or twopenny deduction, should it so happen that the consignment was collected or delivered, or "station to station." The amount involved appears hardly to warrant such an elaborate process or labour necessary to ensure exactness, although it is admitted that the work is relieved somewhat by the preparation of supplementary rate books or cards.

Nevertheless one is compelled to ask why we continue to lumber along on this antiquated system of charging which was uneconomical in peacetime and certainly cannot be justified in wartime. While I am prepared to agree that a drastic alteration of the classification or a change in the method of charging is not to be expected during the present time, I certainly think that we could simplify matters considerably and introduce a more speedy and labour saving method of arriving at the charge for transport of "small" consignments.

The subject seems to be one which should engage the attention of the Railway Rates Tribunal. Perhaps it could be found possible to reduce the present number of classes from nine to three, and make all the rates "collected & delivered," except, of course, between stations where no cartage facilities exist. On the whole, I do not consider that there would be any serious difference in the resultant charge and I do not expect any opposition from the public or traders, as most firms who despatch regular consignments of "smalls" traffic have been accommodated with a "flat" rate or agreed charge.

Yours truly,
J. E. L.

[The subject raised by our correspondent is a perennial topic and the main difficulty would be that if the railway companies proposed a reduction from 9 to 3 classes, traders would bitterly oppose any increase in charges. To standardise the rates on the basis of the lowest charge applicable would obviously involve the railways in a loss of revenue. Although this would not matter under the existing circumstances, the companies must have regard to their post-war position as the question of simplifying railway charges is but one of a number of problems which can only be settled when the post-war relationship of rail and other forms of transport has been determined.—ED. *R.G.*]

Railway Freight Classification of 0 or Nothing

September 6

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The article in your August 27 issue was as ingenious as one expects from Mr. Roger Gibb but it seems doubtful whether the companies or the traders would gain from his suggestion. The only query is as to the cheapest method at which a particular consignment can be charged. The anomalies which are suggested arise only when comparisons are made between consignments of different commodities and weights in an attempt to formulate a logical scheme. Such formulation is quite unnecessary and the only principle that need be followed is that already stated of giving the consignor the benefit of the cheapest charging method for each consignment.

It would be difficult to fix a classification of void weight which would satisfy both traders and railways and when fixed (unless at the lowest classification) it would import the anomaly now avoided, in that, for instance, the railway charge for 5½ tons bricks and ½ ton void weight would exceed the charge for 6 tons bricks.

Yours faithfully,
G. R. C.

COMPRESSION AND INERTIA.—Many rotary engines have been invented under the delusion that the reciprocation of the piston in an ordinary engine occasions a serious loss of useful energy. The supposition is that the work expended in accelerating the heavy reciprocating masses is all wasted. Actually, of course, the masses absorb energy on the first half of the piston stroke only to give it out again during the second half; they are neither more nor less wasteful than the flywheel of a stationary engine but behave in much the same way. When the piston effort diagram is plotted and corrected for inertia effects, it is seen that inertia is beneficial in that it reduces the peak load to be transmitted by the connecting rod at the commencement of the stroke and reinforces the piston effort later on when the steam pressure has dwindled; in other words, it serves to smooth out the unevenness in the turning effort. Compression has been condemned also as wasteful, because it occasions an absorption of energy on the return or exhaust stroke. Steam is elastic, however, and it gives out the work spent on it when the piston commences its next outward stroke. Incidentally the compressed steam helps to prevent a useless flow of steam into the clearance space so that far from being a source of waste compression achieves an important economy.

The Scrap Heap

The sum of £20, contributed by the railway stores staff of the L.P.T.B. at Bollo Lane, Acton, has been received as a donation by the Merchant Navy Comforts Service.

* * *

Super-Caution

A reader has asked us whether it is necessary, in Underground coaches fitted with automatic doors, for notices to the effect that passengers must not enter or leave the train while it is in motion to be painted above the exits.

* * *

Cow Causes Accident

A Reuters message states that a cow, which wandered on to a line of the Union Pacific Railroad recently, caused the derailment of the locomotive and 27 wagons of a goods train. These fouled the adjoining track, causing the derailment of the engine and 23 vehicles of a goods train proceeding in the opposite direction.

* * *

As a result of a drive against persons travelling without tickets on the Lahore-Ambala-Kalka-Simla section of the North Western Railway (India), Mr. Riaz Qureshi, Special Railway Magistrate at Simla, has detected 367 irregular travellers, and convicted 280, of whom 228 were fined. Eighty-seven were charged by the railway staff and 52 were sent to prison.

* * *

On one occasion, while the Editor was being entertained at the Press Club in Berlin, he was sitting at a table in the "jug and bottle department" together with a hearty, fat individual who was addressed by the German equivalent of "Mutton." On inquiry as to how he had won this curious nickname, the answer was that it was because he was the submarine commander who, in the first great war, landed on a small Scottish island and stole a number of sheep, so that the crew could have fresh meat. Incidentally, the entertainment on this occasion was a preliminary to a five-day tour of the *Autobahnen*.—*From "The Commercial Motor."*

* * *

Long Lives

London Passenger Transport Board has four classes of stock which have redemption date of 1985-2023, giving a final maturity date of 80 years from now. But one must turn to North American concerns for records in long-dated securities known to the London market. Two examples are the Northern Pacific Railway 3 per cent. general lien railway and land grant bonds maturing in 2047—104 years hence—and the West Shore Railroad 4 per cent. first mortgage guaranteed bonds redeemable in 2361—or in another 418 years. But even this last-mentioned very long period is easily eclipsed by the Toronto Grey & Bruce Railway 4 per cent. bonds maturing in 2883, or in no less than 940 years' time. The bonds were issued in 1884—59 years ago—which gives them a life of 999 years—surely the record for any issue.—*From "Observer" in "The Financial Times."*

* * *

An amusing instance of the lengths to which merchants will go to evade booking restrictions recently came to light on the G.I.P.R. A certain biscuit manufacturer, having despatched his full tins up-country, wished to obtain the return of empty tins by passenger train. He knew that the despatch of empty tins by passenger train was prohibited. But he also knew that perishable-fruit traffic was accepted by passenger train. So he placed two bananas in each empty biscuit tin and booked the consignment as "one case banana." At destination, he hotly refuted a charge of misdeclaration, on the grounds that there had been, in fact, no misdeclaration in the legal sense. He was correct. As Sir Harcourt Butler once observed, the secret of success in Government service is to remember that there are more ways of killing a cat than by drowning it in cream!—*From the "G.I.P.R. Magazine."*

* * *

The Shrinking Ticket

We are more than half convinced that the motive behind the printing of smaller and thinner railway tickets is to discourage people from travelling. By all the laws of proportion railway tickets are far too small as it is. In future we shall be playing right into the hands of the ticket-collector. The new regulations will hit those of us who are constitutionally incapable of retaining even the standard size of ticket. When the picayune edition is put on the market a railway journey from being merely an uncomfortable ordeal will deteriorate into one prolonged embarrassment. We shall be in a continual state of fidgets through fear of being stigmatised as stowaways by the ticket-collector. We have nothing against ticket-collectors, who carry out, after all, a necessary duty with marked punctilio. What does disturb us, however, is their disconcerting habit of making their rounds when the traveller's vitality is at its lowest ebb. To be suddenly asked for a minute piece of extensively perforated paste-board when one is half-asleep is like being caught in an ambush without a weapon.—*From "The Scotsman."*

"And so this is the dead end?"
"Not yet, but it's in a bad way."
[*From "Ferroviarios"*

* * *

B.B.C. and Gas

Mr. Robert Foot, for some years until 1942 General Manager of the Gas Light & Coke Company, has been appointed sole Director General of the British Broadcasting Corporation.

* * *

Tailpiece

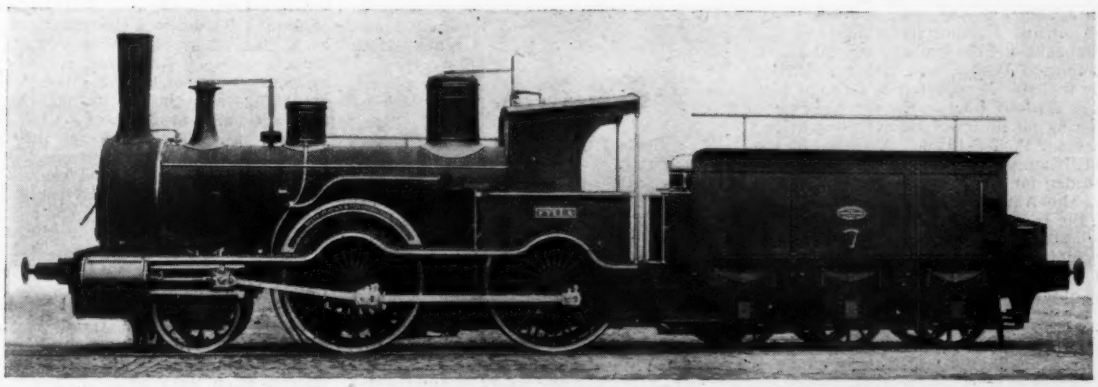
(*Outside London, many of the best business and resort hotels are owned by the railways*)

When at evening you wend to the long journey's end
As the incoming train slows to rest,
And the thought in your head is a meal and a bed,
Then the Railway Hotel is the best.

If a spot you would find where your friends may be dined
Or *per contra* may dine you as well,
Then be sure to sit down to the best in the town
As supplied by the Railway Hotel.

When the cannonades cease and we're winning the peace
You will find it secure in its place.
May it more than survive, may it mightily thrive,
With all its traditions unspoilt and alive,
For the Railway Hotel is the ace.

E. C.



2-4-0 *passenger locomotive Zeeland Railway. Cyl. 16½ in. by 22 in.; coupled wheels, 6 ft. dia.; boiler pressure, 120 lb. per sq. in. Built by Beyer, Peacock & Co. Ltd. in* 1870

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

INDIA

Report of Railway Convention Committee

The Railway Convention Committee of the Central Legislature, which is nearing the end of its work, is agreed on the continuance of the existing arrangement for the allocation of railway surplus between general revenues and railways, and for the contribution to the depreciation fund and to railway reserve, pending the institution of an inquiry into various aspects of the problem, now and in post-war conditions. A number of dissenting notes indicating the points of view of railway employees and of passengers are expected to be added.

UNITED STATES

New Works

An important improvement of the Chicago, Milwaukee, St. Paul & Pacific main line from Chicago to the Twin Cities of St. Paul and Minneapolis is nearing completion. Between Blackbird Junction and Island Siding, near Red Wing, Minnesota, the existing eastbound main track diverges considerably from the westbound track, and has a sharply-curved alignment. This is to be abandoned by the laying of a new eastbound track alongside the present westbound track for 9·2 miles, and the remaining 3·5 miles will be worked as a single track with centralised traffic control. At the two ends of the single-line section No. 20 high-speed turnouts, power-operated, are being laid in. The present eastbound track that is to be dismantled is 13·2 miles long, and the distance to be covered over the new track will be 12·7 miles only. The cost of the new works is estimated at $264,000.

The Pennsylvania Railroad has placed a contract for the opening out of a tunnel near Burgettstown, in Washington County, Pennsylvania, which is to be replaced by a cutting, 4,500 ft. long, 74 ft. wide at the base and up to 120 ft. deep; the work requires the removal of 125,000 cu. yd. of soil and 900,000 cu. yd. of rock. Another tunnel near Cadiz, Ohio, 25 miles northwest of Wheeling, is to be eliminated by a new bypass 4,500 ft. long, 60 ft. wide, at the base, and 75 ft. deep. Both new works are designed to do away with bottlenecks on the New York-St. Louis main line, between Pittsburgh and Columbus.

New Locomotives

In addition to the order for ten articulated steam locomotives placed by the Chesapeake & Ohio Railway with the Lima Locomotive Works, and due for delivery early in 1944, as reported in a recent issue of *The Railway Gazette*, the same railway is inquiring for no fewer than 40 steam locomotives of the 2-8-4 type. Also the Chicago, Rock Island & Pacific Railroad has placed an order for ten 4-8-4 steam locomotives with the American Locomotive Company, and the Indianapolis Union is buying three 0-8-0 steam shunters from the Baldwin Locomotive Works.

The Pittsburgh & Lake Erie Railroad has obtained from the American Locomotive Company 25 0-8-0 steam shunting locomotives, at a cost of $2,000,000.

C.T.C. Installations

Centralised traffic-control is to be installed by the Duluth, Missabe & Iron Range Railway between Iron Junction, Sparta Junction, Keenan, Wolf, and Spruce Junction. The main lines of the D.M.I.RR. are double, but these are short single-line mining-area sections. The control machine, covering the entire territory, will be located at Iron Junction. The contract has been placed with the Union Switch & Signal Company, but installation will be carried out by the railway company's signal staff.

A contract for part of the extensive c.t.c. scheme of the Denver & Rio Grande Western Railroad between Agate and Helper, Utah, also has been awarded to the Union Switch & Signal Company; this is the equipment for 68 miles of single track between Sphinx and Helper, which will be controlled by a 7-panel addition to the existing control machine at Green River. The latter now operates 64 miles of line between Sphinx and Agate on the coded c.t.c. system.

Oakland Terminal Railway

In the San Francisco area, a large proportion of the terminal lines, together with the urban and inter-urban passenger system, has been operated hitherto by the Key System and its associated companies. One of the latter is the Oakland Terminal Railway Company, from which all freight operation has been taken over recently by the Oakland Terminal Railway, a corporation organised jointly by the Atchison, Topeka & Santa Fe Railway System and the Western Pacific Railroad. The new company will serve the Oakland port of embarkation and general depot of the United States Army, in the Oakland Outer Harbour district, as well as certain industries on the Key System in Inner Oakland. The new company has the advantage of operating over the Oakland Bay Bridge route, already used by the Key System for passenger purposes, which saves much time previously lost by ferrying across the bay to and from San Francisco.

FRANCE

New Signal-Equipment Firm

It is reported that railway industrialists are considering the establishment of a signalling undertaking, to manufacture automatic block and other equipment, with a share capital of fr. 5,500,000, working in conjunction with the Précision Moderne concern the old-established firm of Saxby at Creil, where manufacture would be carried out. The Saxby concern at one time manufactured, almost exclusively, mechanical-signalling apparatus, but of recent years has turned its attention to producing power-signalling equipment, and has developed its own form of route-setting frame.

ITALY

State Railways in 1941-42

According to recent figures, the route miles of the Italian State Railways on June 30, 1942, amounted to 10,645 (17,170 km.), as compared to 10,570 (17,050 km.) the previous year.

Passenger Services

The reduction in passenger services in 1941-42 resulted in the daily average of trains run being 18½ per cent. lower than in the previous year; but this reduction is stated to have been compensated by longer trains—the average was 24·9 axles (20·1 axles in 1940-41). The abolition of restaurant-car services and the partial withdrawal of sleeping-car and railcar services also enabled the railways to increase the ordinary passenger accommodation.

Train Mileage

Passenger train mileage totalled 55,800,000 (90,000,000 km.) in 1941-42, which was 15 per cent. less than in the preceding year. On the other hand, goods train-mileage increased by slightly more than 10 per cent. to 60,140,000 miles (97,000,000 km.).

Road Goods Services

The State Railways-operated road-motor goods services averaged 20,100 miles (32,063 km.) daily during 1941-42, against 18,600 miles (30,000 km.) in the preceding year.

DENMARK

State Railways Results in 1942-43

Better working results were attained by the Danish State Railways for the year ended March 31, 1943, than for any previous similar period, and there was a net profit amounting to kr. 4,600,000, compared with a loss of kr. 20,700,000 for 1941-42, and of kr. 24,600,000 for 1940-41. Working receipts for the year under review totalled kr. 284,000,000, an increase of kr. 51,100,000 over the previous year. Goods receipts amounted to kr. 144,000,000, against kr. 114,700,000, and passenger receipts to kr. 122,500,000, compared with kr. 101,600,000. Working expenditure increased by kr. 24,800,000 to kr. 206,200,000; and there was a working surplus of kr. 77,800,000, compared with kr. 51,500,000 for the preceding year. Ordinary depreciation amounted to kr. 6,100,000, and extraordinary depreciation to kr. 54,000,000 (kr. 50,000,000). Services had to be curtailed drastically due to shortage of coal; and further curtailments are expected during the current year. The reduction in services particularly affected passenger trains.

SWEDEN

Railway Electrification

Electrification in Sweden has been carried out mainly on the State Railways, of which approximately 2,650 route miles (or not far short of the total State Railway mileage) have been converted. As far as the private railways are concerned, electrified sections at the beginning of this year totalled only about 370 miles out of some 3,000 miles privately owned.

The largest private company, the Bergslagen Railways, for some years has carried out electrification work. The first section, between Gothenburg and Åmål, a distance of about 100 miles, was electrified in 1938-39 at a cost of kr. 4·6 million; a second section, between Åmål and Kil, about 40 miles, at a cost of kr. 1·8 million (opened in 1940); and the section Kil-Daglösen, about 38 miles, at a cost of kr. 1·6 million (opened in 1941). Work on the Falun-Gävle line, about 57 miles, is now going on, and when this is completed electrification will begin of the Falun-Ludvika section of about 43 miles. Work is expected to be completed on the latter line in the autumn of 1944, at an estimated cost of kr. 5·8 million. It is expected not to be long before the Ludvika-Daglösen section, of some 70 miles, is taken in hand. Difficulties arising from the shortage of materials have been overcome.

Some details of Swedish State Railways electrification were given in *The Railway Gazette* of April 2 last, and a map, showing, among others, the electrified lines, appeared in the issue of December 11, 1942.

British-Built "Austerity" 2-8-0 Type Tender Locomotives

Manufacturing economies are achieved in a simple design that uses fabricated and cast-iron parts wherever possible

IN our issue for November 20, 1942, we gave a preliminary description of an "austerity" design of 2-8-0 tender locomotive for which the Ministry of Supply had placed considerable orders with the North British Locomotive Co. Ltd. and the Vulcan Foundry Limited. At that time no locomotive had been fully completed and only a wash drawing was available to convey an impression of the finished unit. The first of the engines was handed over formally to the Ministry of Supply on January 16, 1943, as reported in our issue for January 22; the first photographic illustration of the engine under steam appeared in our issue for January 29. In the present article a summary is given of the principal particulars contained in our previous article and the opportunity is taken to add further particulars gleaned from a personal inspection of finished locomotives (a considerable number of which are now in service on the British railways) and others still under construction.

Externally the new locomotives make a very good impression; their appearance is neat and not unduly characterised by economy features. As our folding plate shows, the internal construction is on well tried lines and it is not immediately obvious from the drawing where savings have been achieved in material and labour. Nevertheless these savings are substantial and a closer study of the details will show that many have been fabricated to eliminate as far as possible the use of steel castings and forgings. The weekly output of these engines has already set a new record in rapid locomotive construction.

Main Particulars

There are two outside cylinders driving the third pair of coupled wheels, and Walschaerts motion is employed for actuating piston valves working above the cylinders; these valves are arranged for inside admission. The hand-screw reversing gear is arranged for left-hand drive. Below are given some dimensions and weights:—

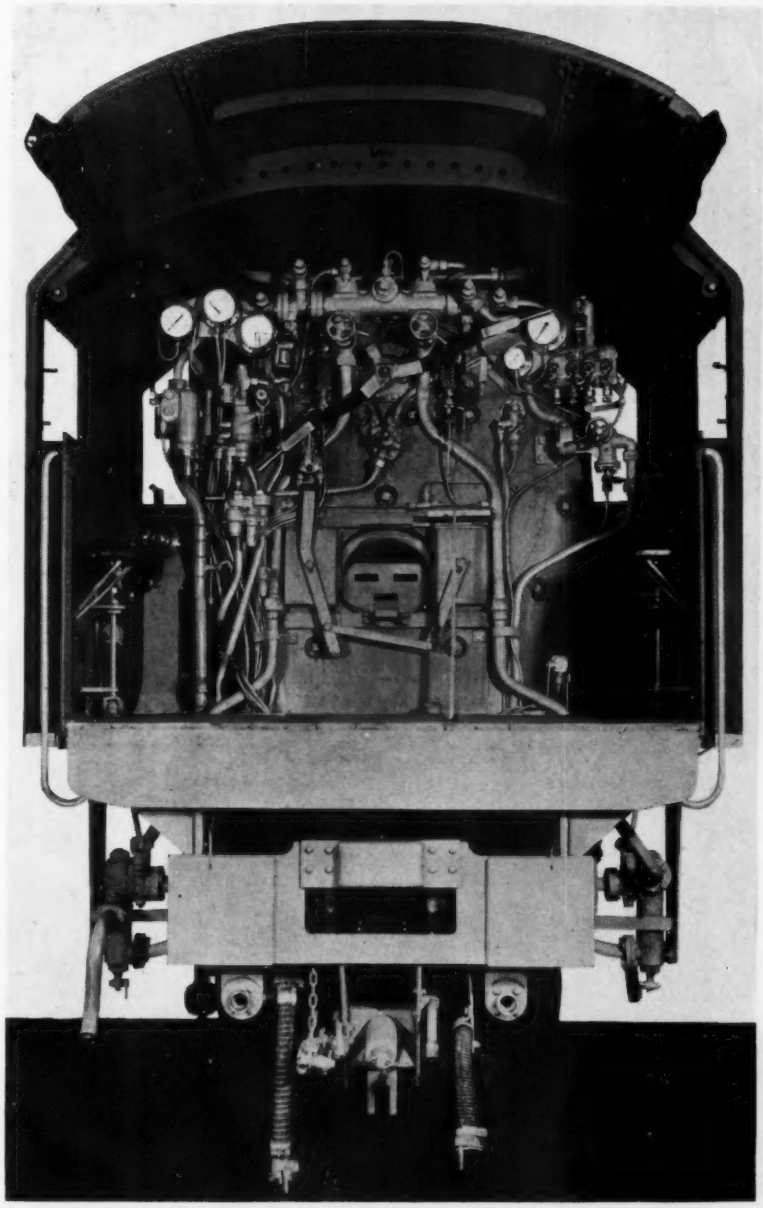
Cylinders (2), dia.	19 in.
Piston stroke	28 in.
Piston valves, dia.	10 in.
Piston valves, max. travel	6¼ in.
Wheels, coupled, dia.	4 ft. 8½ in.
Wheels, leading truck, dia.	3 ft. 2 in.
Wheelbase, coupled	16 ft. 3 in.
Wheelbase, total	24 ft. 10 in.
Boiler heating surface—	
Large tubes	451 sq. ft.
Small tubes	1,061 sq. ft.
Firebox	168 sq. ft.
Total evaporative	1,680 sq. ft.
Superheater surface	310 sq. ft.
Combined total	1,990 sq. ft.
Grate area	28·6 sq. ft.
Boiler pressure	225 lb. per sq.in.
Tractive force (85 per cent. b.p.)	34,215 lb.
Adhesion weight	61½ tons
Weight of engine in working order	70½ tons
Weight of tender in working order	55¼ tons
Total weight of engine and tender	125¾ tons

The tender has eight wheels; it has a self-trimming coal bunker of 9 tons capacity. The water tank, which is of welded construction, has a capacity of 5,000 gal.

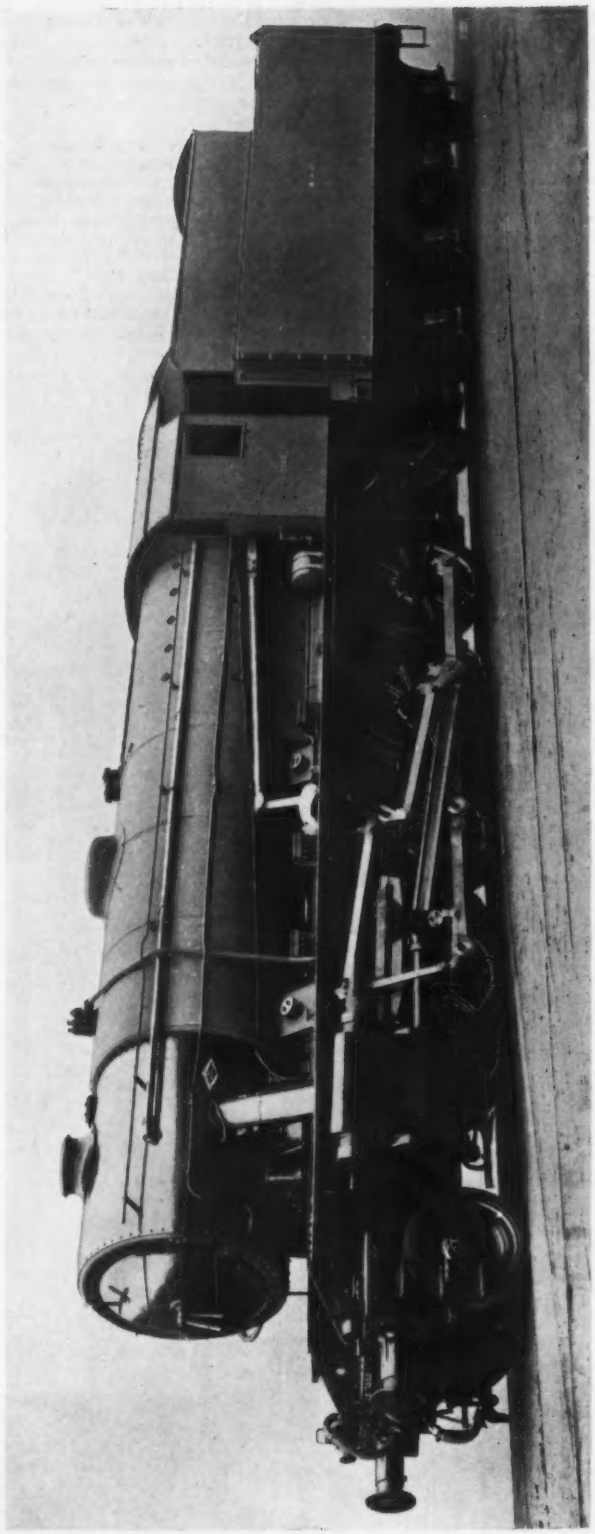
Economy Features

Though the new engine is intended to meet main-line operating requirements and will handle 1,000-ton trains at a speed of 40 m.p.h. or thereabouts, every opportunity has been taken to make the design an economical one from the manufacturing point of view. To minimise the requirement for labour all parts have been kept as simple as possible. Here and there some slight elaboration has been deemed desirable to make the engine accessible for cleaning and overhaul, but generally only the most straightforward principles of construction have been employed. Fabrication has been the method used in the construction of many components that would normally be made from steel castings and forgings. This process is not necessarily economical in labour; the reason for its adoption is to limit the demand for steel castings and forgings, manufacturing facilities for which were already fully engaged in meeting other wartime requirements. Certain steels and non-ferrous materials are in short supply; their use in the new locomotives has been restricted to the minimum.

As an illustration of simplicity in design leading to economies in labour the boiler makes a good example; the round-topped firebox and the parallel barrel make it a particularly straightforward type for quantity production. Its clothing, moreover, is of the simplest, for except on the backplate it consists merely of steel plates carried on crinolines; sufficiently good insulation against heat loss is provided by the air space



Rear-end view of engine arranged for coal firing



General view of locomotive in standard service finish

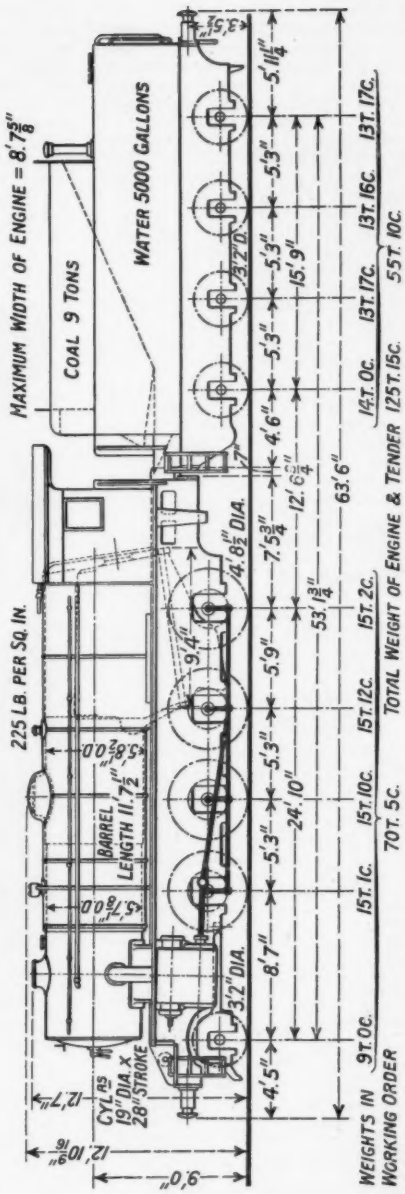
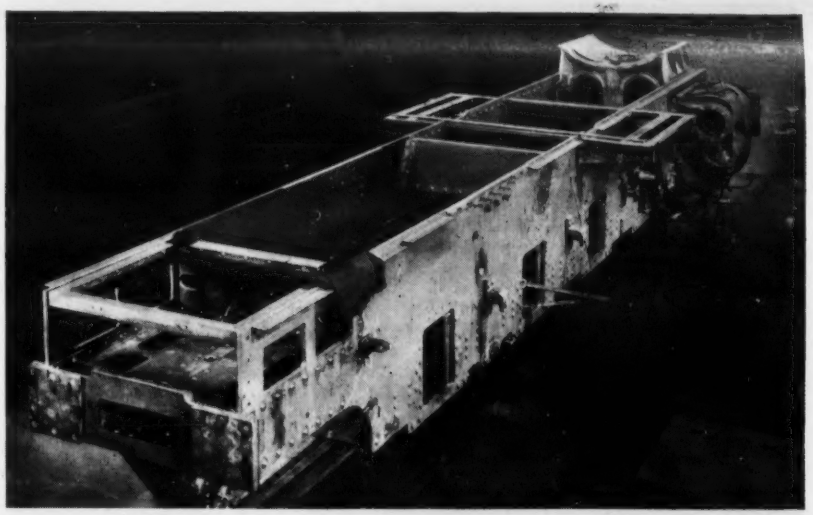


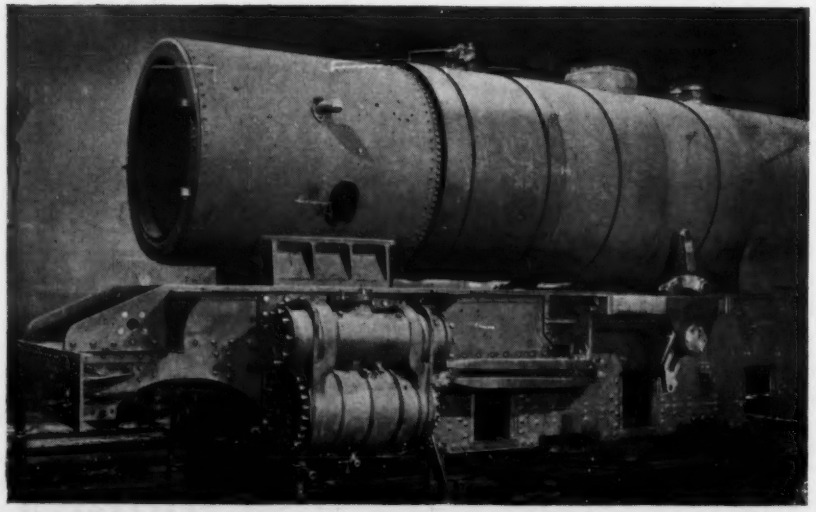
Diagram giving principal dimensions and axle loads

Diagram giving principal dimensions and axle loads

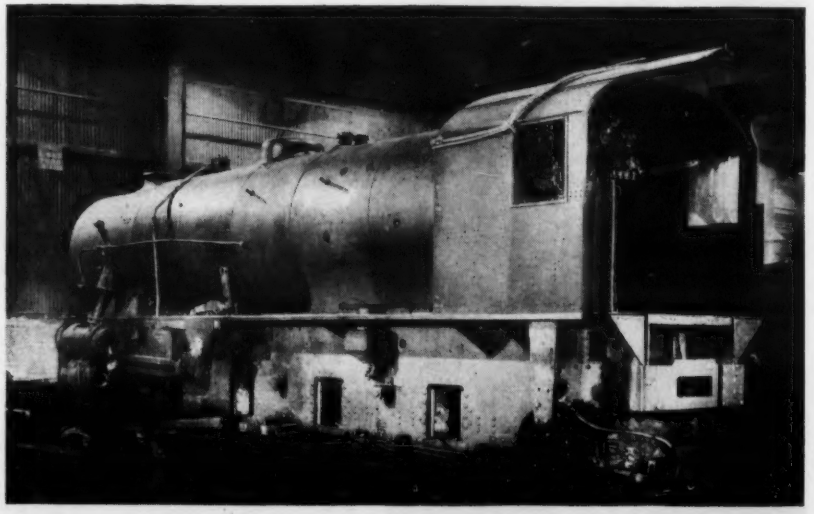
Partly clothed boiler showing simplicity of design



Engine side frames showing stretchers, cylinders, and front-end saddle

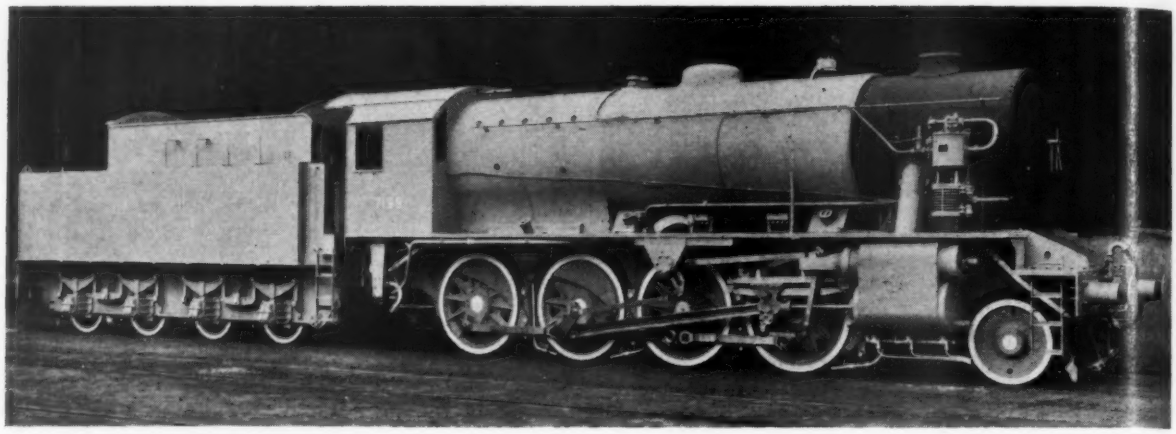


Front end assembly showing slide bar mounting and details of reversing gear



General view of engine ready for lowering on to wheels and axles

BRITISH-BUILT "AUSTERITY" 2-8-0 TYPE TENDER LOCOMOTIVE



One of the latest of the Ministry of Supply "austerity" locomotives to leave the builder's works. This illustration shows the Westinghouse brake pump in its present position, to which it has been lowered in order to allow of improved visibility from the cab

between these plates and the boiler proper.

Interesting instances of the elimination of steel castings and forgings by the use of fabricated parts are found all over the engine but four examples must suffice. The axlebox guides, which would normally be cast, are made from flanged plate reinforced by triangular ribs. Brake-hanger and spring-link brackets are made from strip material; a bent piece and a straight piece are welded together to form a single bracket of the type that is usually forged. The reversing rod is tubular with the ends welded on and the reverse shaft is likewise a tube with forged ends and levers welded in place.

Cast iron is used in the normal way for the cylinders, for the blast pipe, which is in one piece, and for the smokebox saddle which has the exhaust passages formed in it. The front end cylinder covers are of cast iron and so is the chimney. Cast iron has been used to replace steel in the manufacture of certain of the wheels. The centres of those on the first two-coupled axles and on the trailing coupled axle are of high-duty cast iron; the main driving wheel centres are of steel castings; the leading truck wheels and the tender wheels are rolled with tyres in one piece but there is an ample rim section so that they can be re-turned after wear has taken place.

The steel and iron centres of the coupled wheels are made from similar patterns and are pressed on to their axles. Rather less pressure, about 6 instead of 10 tons per inch of axle diameter, is used to press on the iron centres. Balance weights are cast integral with the centres and no allowance is made for reciprocating parts. The rear cover castings for the cylinders are of steel, as these are required to support the front ends of the cross-head slide bars.

No compensating levers are provided in the locomotive springing, nor is there any provision for adjustment after assembly. The tender springing is compensated so that it will run satisfactorily, notwithstanding its relatively light axle loading, over a track not in the best of condition.

The two-wheel truck at the front end of the engine is of the three-pin swing link variety; it enables the locomotive to negotiate curves with a radius down to 5 chains.

The Valve Gear

Plain bearings are used throughout in the valve operating mechanism; the bushes are made of cast iron. The valves are provided with a steam lap of 1½ in., and an exhaust clearance of $\frac{1}{16}$ in. In full forward gear there is a clearance of 1 in. at the bottom of the link and the slip of the die is ¾ in. In backward gear the clearance at the top of the link is 1 in., and the slip of the die is 1⅜ in. Tables are given herewith showing the valve events in forward and backward gear.

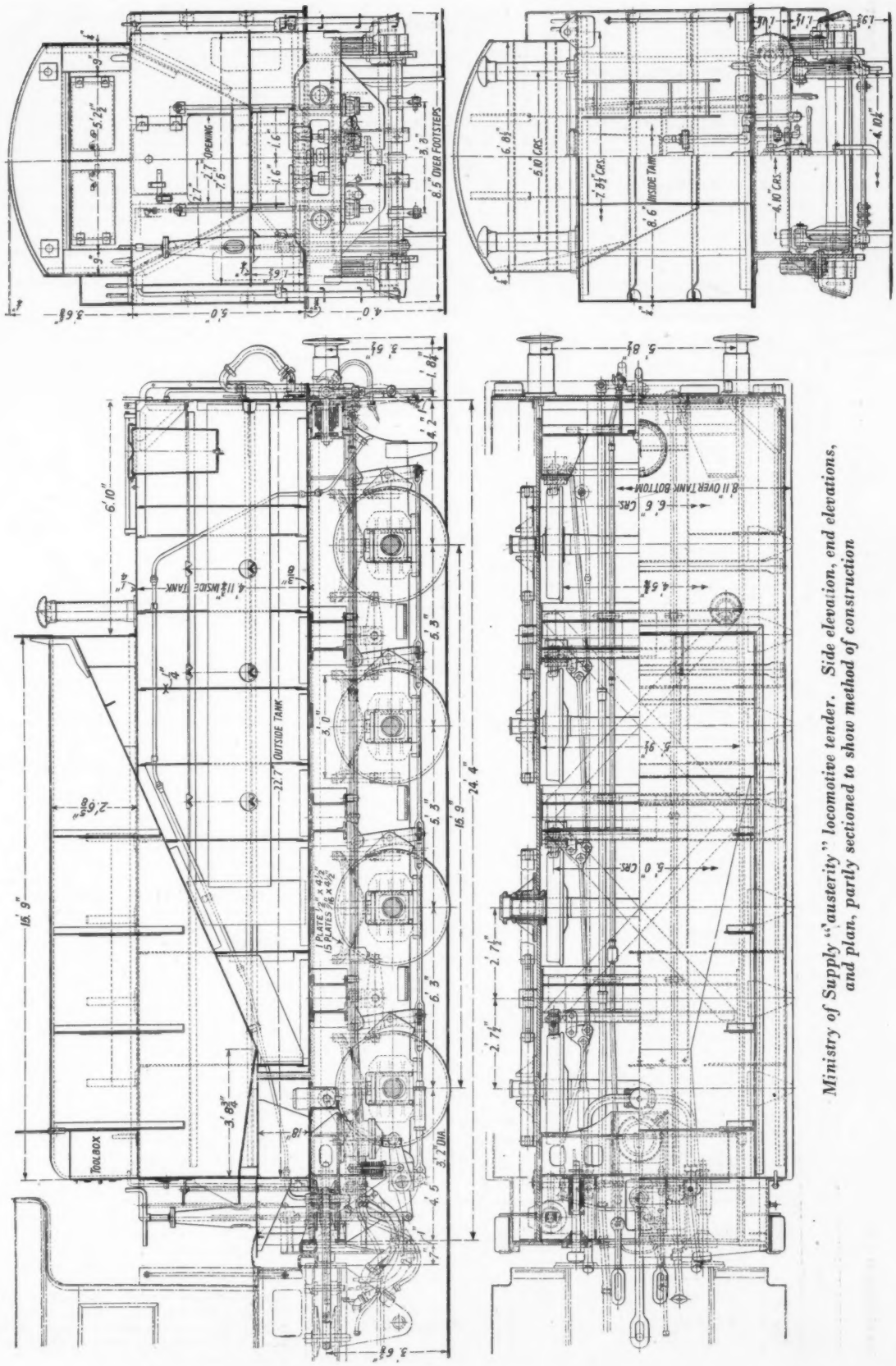
Equipment and Materials

Particulars relating to the material used in certain parts of the locomotive are given in the following table:—

Description	Material	Tensile strength tons per sq. in.	Test specification
Boiler shell plates	Steel	25—30	BSS. 24—16
Inner firebox	Copper	14 min.	BSS. 24—11
Steel stays	Colville's O.H. steel	28—32	BSS. 24—8
Copper stays	Copper	14·5 min.	BSS. 24—12
Flue and boiler tubes	Steel	20—26	BSS. 53
Axles	Steel	35—40	BSS. 24—2
Tyres (coupled)	Steel	56—62	BSS. 24—4D
Connecting rods, Coupling rods, Crank pins, Eccentric cranks, Drawhooks, Screw couplings	Forged steel	32—38	BSS. 24—8C
Piston rods, slide bars, reversing screw	Forged steel	40—45	BSS. 24—8D
Laminated springs	Steel	—	BSS. 24—6b
Coupled wheel centres (except main driving)	High duty cast iron	—	—
Main driving wheel centres	Cast steel	26 min.	BSS. 24—10
Tender wheels, Leading truck wheels	Steel, solid forged and rolled	—	—

Though generally of a special and economical design the locomotive is provided with a certain amount of standard equipment where this has been felt desirable or where the parts were readily available. Thus the boiler is provided with a superheater by the Superheater Co. Ltd., and the cylinders are equipped for high temperature steam with cast-iron packings supplied by the United States Metallic Packing Co. Ltd. Boiler fittings include two pop safety valves by David Auld & Son, two water gauges by W. N. Baines & Company, boiler and steam brake pressure gauges by Smith Bros. (Hyson) Limited, and two No. 10 injectors by Davis & Metcalfe Limited. The latter are fitted under the footplate. Both are of the right-hand pattern and therefore interchangeable. They are connected to two top-feed valves which are mounted on the boiler between the dome and the chimney. Cylinder lubrication is by means of a Detroit sight feed lubricator fitted in the cab; these are by the Vacuum Oil Co. Ltd.

Steam braking is provided on the engine and tender; equipment is provided for both vacuum and pressure braking on trains. Vacuum brake equipment is supplied by the Vacuum Brake Co. Ltd., and pressure brake equipment by the Westinghouse Brake & Signal Co. Ltd. The Westinghouse brake pump, which is of the K.L.2A type, is mounted in an accessible position on the side of the smokebox. Since our drawing was prepared the pump has been lowered approximately 10 in. to give improved visibility from the cab. The air reservoirs are fitted out of sight between the frames. A special steam-brake valve by Gresham & Craven Limited provides manual or automatic application of the locomotive brake. Automatic application takes place when the train brakes are applied and is proportional to the strength of the train braking whether this be by vacuum or compressed air. The buffers on engine and tender are supplied by G. Turton



Ministry of Supply "austerity" locomotive tender. Side elevation, end elevations, and plan, partly sectioned to show method of consruction

VALVE EVENTS

Exhaust Clearance = 1/16 in.

Lap of Valves = 1 1/4 in.

FORWARD GEAR

Notch		Travel	Lead			Port Opening			Cut off per cent.			Release per cent.			Angle of Release			Compression			Exhaust Travel		
Per cent. Cut off	Angle	Inches	F.P.	B.P.	D.	F.P.	B.P.	D.	F.P.	B.P.	D.	F.P.	B.P.	D.	F.P.	B.P.	D.	F.P.	B.P.	D.	F.P.	B.P.	D.
			In.	In.		In.	In.	In.													In.	In.	In.
Full	19½	6⅝	¼	¼		1⅛	1⅛	¼	77	73½	3½	92	91½	1½	145	147	2	92	93	1	3⅞	3⅞	⅞
70	18	6⅜	¼	¼		1⅛	1⅛	¼	73	69½	3½	91	89½	1½	143	143½	1	90½	91½	1	3⅞	3⅞	⅞
60	14	5⅛	¼	¼		1⅛	1⅛	⅜	64½	60	4½	87	85½	1½	136	137	1	87	88½	1½	2⅜	2⅜	⅞
50	10½	4⅛	¼	¼		1	1	⅜	52	50	2	82½	80½	2½	128	129½	1½	82	84½	2½	2⅜	2⅜	⅞
40	8	4⅞	¼	¼		⅞	⅞	⅜	42	41½	½	79	76½	2½	122	124	2	77½	80½	3	2⅛	2⅛	1
30	6	3⅝	¼	¼		⅞	⅞	0	30½	30½	0	72½	70	2½	113	115	2	73	75	2	1⅞	1⅞	1
20	3½	3⅜	¼	¼		⅞	⅞	0	21	19	2	65	63½	1½	104½	108½	4	66	67½	1½	1⅝	1⅝	1
10	1	3⅛	¼	¼		⅞	⅞	0	10	9	1	54	54	0	91	97	6	56½	57½	1	1⅝	1⅝	1
Mid	0	3⅛	¼ (f)	¼ (b)		⅞ (f)	⅞ (b)	0	8½	6½	2	50½	50	½	87	93	6	52½	52½	½	1⅝	1⅝	⅞

BACKWARD GEAR

Notch		Travel	Lead			Port opening			Cut off per cent.			Release per cent.			Angle of release			Compression			Exhaust travel		
Per cent. cut off	Angle	In.	F.P.	B.P.	D.	F.P.	B.P.	D.	F.P.	B.P.	D.	F.P.	B.P.	D.	F.P.	B.P.	D.	F.P.	B.P.	D.	F.P.	B.P.	D.
			In.	In.		In.	In.	In.													In.	In.	In.
Full	20	6⅞	¼	¼		1¼ (b)	1⅛	⅜	80	71	9	98½	89½	9	150½	156	5½	90	94	4	3⅛	3⅛	⅞
70	17½	5⅝	¼	¼		1¼ (b)	1⅛	⅜	75	68	7	92	87	5	146	151	5	88½	93	4½	2⅞	2⅞	⅞
60	14½	5⅛	¼	¼		1¼	1	⅜	65	60	5	89	84	5	140	144	4	86	90½	4½	2⅞	2⅞	⅞
50	10½	4⅛	¼	¼		1	⅞	⅜	52	49½	2½	84	80	4	131	130	1	81½	85	3½	2⅞	2⅞	⅞
40	8½	4⅞	¼	¼		⅞	⅞	⅜	40½	40	½	79	76	3	124	124½	1	78	81	3	2⅛	2⅛	1
30	6½	3⅝	¼	¼		⅞	⅞	⅜	31½	31	½	74	71½	2½	116	119	3	73½	77	3½	1⅞	1⅞	1
20	4½	3⅜	¼	¼		⅞	⅞	⅜	21	20½	½	66	65	1	106	111	5	67½	69	1½	1⅝	1⅝	1
10	1½	3⅛	¼	¼		⅞	⅞	⅜	11	9	2	54½	54	½	92½	98	5½	57½	57	1	1⅝	1⅝	1
Mid	0	3⅛	¼ (f)	¼ (b)		⅞ (f)	⅞ (b)	⅜	7½	7	4	49	49	—	86	93	7	52½	52	½	1⅝	1⅝	⅞

Platts & Co. Ltd. Carriage heating equipment provided on 100 engines only is by Laycock Engineering Co. Ltd., and R. L. Ross & Co. Ltd.

The materials listed in the accompanying table are of the most widely available kind and among the numerous suppliers may be mentioned Colvilles Limited for boiler shell plates and steel stays, Imperial Chemical Industries Limited, and T. Bolton & Sons Ltd., for copper stays, Steel, Peech & Tozer Limited, for axles, tyres, and laminated springs, Taylor Bros. Ltd., for axles and rolled steel wheels, W. Griffiths & Sons for laminated springs. Stanton Iron Works Limited, and Coltness Iron Co. Ltd., for wheel centres, and Glenboig Union Fireclay Co. Ltd. for refractory material. Forged steel parts are made by Dudley Drop Forgings Limited, Metropolitan-Cammell Carriage & Wagon Co. Ltd., Armstrong Stevens & Sons, P. & W. MacLellan Limited, among others.

A point of interest to operators of the new locomotives is their ready adaptability to altered conditions. The boiler can be converted for oil burning without removal from the engine; it is necessary only to add a false bottom in the ashpan and fit oil burners. The slides normally occupied by the two halves of the firedoor serve to hold in position a firehole blanking plate which is provided with a firedoor having a small opening for furnace observation. The tender is as readily adaptable as the engine; it can, moreover, be provided with a water scoop. The narrow bunker shown in the illustrations gives excellent visibility when the engine is running tender first, and it leaves a convenient ledge on which to accommodate fire tools. Bolt holes are provided in front of the engine to facilitate fitment of a cowcatcher for service overseas.

Reusing Ball and Roller Bearings

Official action unique in the history of war production has been taken by the Bearing Control, Ministry of Supply, with a scheme to ease the demand for new ball and roller bearings, and to effect economies in the use of material and manpower, by putting back into service used bearings which, in many instances, are suitable for secondary tasks, such as conveyors, castors, low price plummer blocks, and ball mills.

A former clothing factory near London is the pioneer depot for this work. The bearings are unpacked, sorted into various sizes, and washed in paraffin. If they are fit for further service, the stained surfaces are cleaned, and two small "nicks" are ground on the radii of the outer rings to show that the bearings are secondhand; they are finally inspected, regreased, and wrapped, ready for distribution. Bearings considered too worn are broken down to recover balls and rollers, which are used for ball-mill purposes. The residue is sorted into scrap-metal grades (brass, chrome steel, mild steel, duralumin, etc.) to facilitate usage by re-melters.

The depot uses a simple but ingenious device for size-grading used balls. Two sloping steel bars, each about 3 ft. long, are clamped together at top and bottom with a space between which widens out to pre-determined angles. A ball is fed at the top of the device by the operator, and rolls down until the space between the bars exceeds its diameter, when it drops into a compartment.

"Express" Traffic in North America

A brief history of the "express" companies, which are now owned by the principal railways

A DISTINCTIVE feature of American transport from very early years has been the position occupied by the express companies, catering for what may be termed approximately the parcels traffic, which until comparatively recently was not handled either by the railway companies or by the United States Post Office. Changes within recent years have somewhat altered the position, but "express" is still—and likely to remain—a very extensive and important feature of the business life of the country. The originator of this characteristically American type of shipping is commonly accepted to be Mr. Walter F. Harnden of Boston—known as the "carpetbag expressman"—who established an express company on March 4, 1839, to meet a public need of the time for through transport facilities between New York and Boston. He made the trip himself regularly, using train, steamboat, and stage-coach, to complete the journey, and the volume of packages entrusted to him soon outgrew his carpetbag. He then organised a New York to Philadelphia service, and by 1850 his business had been extended into the Southern States. An impressive monument to Harnden's memory stands in Mount Auburn Cemetery, near Cambridge, Massachusetts, and is often called a "shrine to expressmen."

Henry Wells and Alvin Adams, both employees of Harnden, established enterprises of their own which extended the service westward and contributed greatly to the development of the West during the pioneer era of the stage-coach and the pony express. Adams began in 1840 in competition with Harnden, but in 1854 Adams & Co., Harnden & Co., and two smaller firms (Thompson & Co. and Kinsley & Co.) were consolidated to become the famous Adams Express Company, which existed until 1920. During slavery days, the shipment of negroes by express from one part of the South to another supplied the Adams Express with a considerable amount of profitable trade. The Livingstone Company (formed in 1841) and the Wells Company (founded in 1845) were merged in 1850 as the even better-known American Express Company.

The first Canadian express company was an undertaking called Virgil, Howard & Co., which was formed in Montreal in 1842, and initially operated on the Montreal-Albany route; it linked up at Albany with the New York service of Pullin & Copp (a competitor of Harnden), and the two firms merged in 1844. In 1848 the United States & Canada Express Company was formed as a consolidation of various smaller undertakings, and in 1854 a group of Canadian businessmen established the British & North American Express Company. The latter became the nucleus in 1864 of the Canadian Express Company, which was formed to consolidate all the express companies in eastern Canada; William G. Fargo was a director. Early in 1866 an arrangement was entered into between the Canadian Express Company and the American Express Company whereby, in consideration of the Canadian Express Company relinquishing the line between Toronto and Hamilton, which was formerly occupied by the British & North American Express Company, the American Express Company turned over to the Canadian company the line between Toronto and Detroit. On June 14, 1869, a new contract was made between the Canadian Express Company and the Grand Trunk Railway of Canada in which the companies agreed as to details of express charges and carryings. Later the Canadian Express Company made arrangements with what were known then as the Canadian Government Railways and extended its service also to some smaller cities. In 1888 the American Express Company agreed to withdraw from all Grand Trunk lines and transferred its business to the Canadian company. Four years later, in 1892, the Grand Trunk purchased the stock of the Canadian Express Company and thereafter the company was operated by the railway. When the Government took over the Grand Trunk Railway, the company became the Canadian National Express Company and has since developed into the great undertaking it is today.

A comparable express service is provided by the Canadian Pacific Railway through the medium of its wholly-owned subsidiary, the Canadian Pacific Express Company, which has a capital stock of $3,000,000.

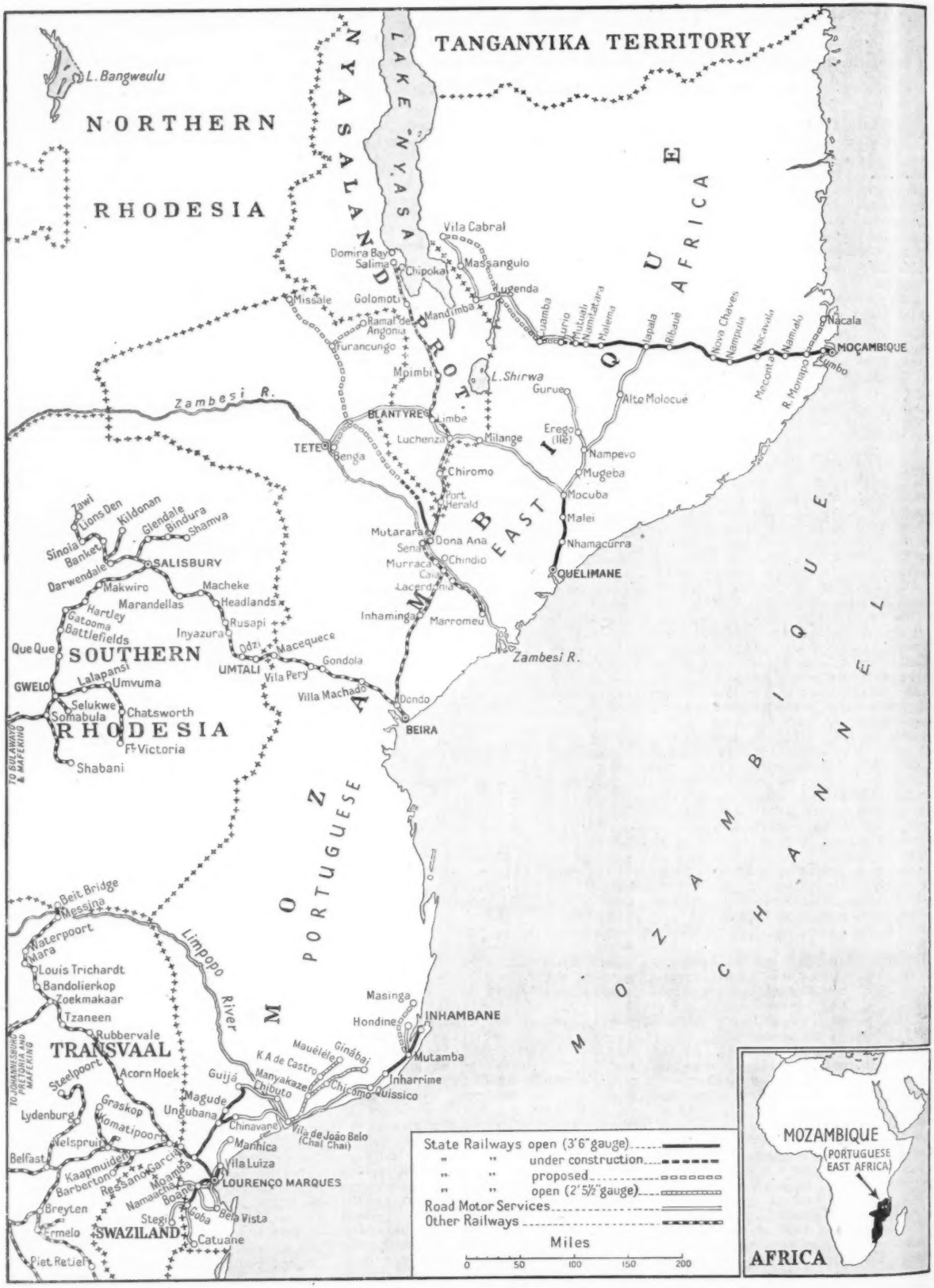
In the U.S.A., after the civil war, this type of business spread extensively and resulted in the formation of numerous large express companies, but most of these became consolidated into six undertakings—the United States (formed in 1854), the Adams, the American, the Pacific (formed in 1879), the Southern (incorporated in 1886), and Wells, Fargo & Company (established in 1852). The last-named was a partnership between Henry Wells and a banker named William F. Fargo. Broadly, these six divided the field among themselves, every company having most of the traffic in its particular section. Moreover, in so far as different companies were interested in the same section, and to the extent that they came into traffic competition, their relationships were regulated by mutual understanding so that there was no violent, and little active, competition among express companies. Every large railway granted a monopoly of its parcels traffic to a single express company under the terms of an agreement which stipulated that the express company should handle, load and unload the parcels; assume the risk for loss and damage; and pay the railway a percentage (usually 40 per cent.) of the gross receipts, for providing and hauling the carriages used. An important stipulation was that the minimum express rates should be fixed at a percentage above the charges the consignor would have to pay were the goods dispatched as freight. Apart from the fact that the railways themselves did not engage in this type of business, the importance of the express companies was further enhanced by the limit of 4 lb. on the weight of any postal packet, which applied until the beginning of 1913. More recently, however, the scope of the U.S. Post Office has been steadily increased, until at the present time packets up to 22 lb. in weight are accepted.

During the European war period of 1914-19, the domestic express business in the U.S.A. was consolidated and in 1918 almost the entire field was occupied by the American Railway Express Company, but without any fundamental change in the conduct of affairs. The position applied until February 28, 1929, when control of the undertaking was acquired jointly by all the large American railway companies, and under the new auspices the name Railway Express Agency Inc. was adopted on March 1, 1929. In all, 86 Class I railways participated in the scheme. This still left the Southeastern Express Company outside the arrangements, but from August 1, 1938, that company withdrew from the express business, and its operations on the Southern Railway, the Mobile & Ohio, and 27 other lines, were taken over by the Railway Express Agency. This development was the result of an operating agreement made by the various railways and express companies involved, which received the approval and authorisation of the Interstate Commerce Commission on June 1, 1938. It had the effect of enabling the Southern Railway system to gain proportionate ownership in the R.E.A. and added some 9,650 miles of steam railway line to the total of nearly 200,000 rail miles previously covered by the R.E.A.

In addition to the inroads into the express business necessarily resulting from the increased Post Office activity, American railway freight transport has, of course, undergone a considerable change with the extension of road transport. Railway collection and delivery services are now an accepted feature, whereas only a few years ago they were virtually non-existent. Nevertheless, the express business still maintains its distinctive features in the handling throughout of parcels and other small consignments. It may be added that other businesses which grew up around the extensive organisations of the old express companies, such as those of bankers and tourist agents, have been unaffected by these changes. The American Express Company, for example, still flourishes as a world-wide undertaking, and the present company, which was incorporated in New York on November 25, 1868, has included since 1925 the undertaking of Wells, Fargo & Co.

At the outbreak of war, express traffic was conducted on 206,573 miles of U.S.A. steam railway, and carried on some 10,000 passenger trains operated by American railways. The Railway Express Agency Inc. also operated over 2,722 miles of electric interurban line; 20,376 miles of shipping route; 12,208 miles of road motor service; and 37,966 miles of air line. Some 1,522 miles of route were worked with railcars. About 23,000 offices are maintained, 57,000 men and women are employed, and 11,000 motor lorries are used daily in collection and delivery service. The total road fleet of the company consists of about 15,000 units, the largest fleet in the U.S.A. under one control. More than 45,000 four-wheel platform trucks, some motor driven but mainly manually operated, are used to handle express traffic at railway stations, as well as 10,000 two-wheel warehouse trucks. The capital stock of the Railway Express Agency is owned by 70 of the principal U.S.A. railways, and the company has uniform contracts with a further 447 railways and other carriers, making it the exclusive agent of each such carrier for the conduct of express operations over its system.

XUM



The railways of Mozambique (Portuguese East Africa) and adjacent territories, showing connecting road services in Mozambique only (see article on opposite page)

Railways in Portuguese East Africa

Important transit routes from ports on the East African coast to South Africa, Rhodesia, and Nyasaland

THE situation of Portuguese East Africa, with the fine natural harbour of Delagoa Bay, on which is the port of Lourenço Marques, only 89 km. (55 miles) from the Transvaal border, made it the object of early attention by those desirous of improving communication with certain parts of the interior of the continent. The Transvaal Republic sought an outlet to the sea in this direction, and in January, 1895, the Netherlands South African Railway Company began a regular daily through service over its newly-completed line from Pretoria to Komati Poort and thence over the Portuguese line from the frontier, crossed near Ressano Garcia, to Lourenço Marques. The industrial development of the Transvaal, and later of the Union of South Africa generally, had considerable effect on the fortunes of this important transit route.

In 1899 a line promoted by a British company was opened from the port of Beira to the Rhodesian frontier at Umtali; this is now operated by the Rhodesia Railways in association with the Mashonaland Railways. In 1922 the line from a junction on this railway at Dondo, 18 miles from Beira, to Sena on the River Zambesi was opened. This now connects with the Nyasaland Railways, the bridge over the Zambesi, the most important work of its kind in Portuguese East Africa, having been opened in 1936.

A line was opened in 1912 from Lourenço Marques towards the frontier of Swaziland, but as yet has not become a through route, as had been hoped originally. Two years later a branch was opened from Moamba, on the Transvaal line, 53 km. (33 miles) from Lourenço Marques, to Chinavane and a connection branching off this line, and known as the Limpopo Railway, has now been completed to Guija. In 1915 a line 91 km. (57 miles) long was brought into use from the port of Vila de João Belo (Chai-Chai), at the mouth of the River Limpopo, intended to connect with the line made southwards from Inhambane. As yet, however, the railways leaving these two ports are isolated from one another and from the rest of the railway system of the territory.

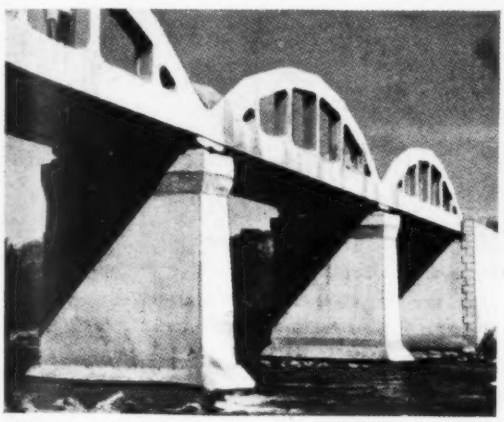
The line from Quelimane was opened in 1922 and extends for some 145 km. (90 miles), while in 1924 the first portion was opened of what will become an extensive system of lines, leading from the northern port of Mozambique towards Nyasaland; this now covers some 451 km. (280 miles). In the same year a short line, at first built to a narrow gauge, was completed from Lourenço Marques to Vila Luiza (Marracuene). At present the only narrow-gauge lines open for public traffic are the Gaza lines, which are built to the 0·75 m. (2 ft. 5½ in.) gauge; elsewhere the 3 ft. 6 in. gauge prevails. It is stated, however, that there are some 340 miles of narrow-gauge lines serving private agricultural and mining interests. There is only one piece of double track, extending westwards for 6¼ miles from Lourenço Marques on the Transvaal line. It is interesting to note that this Transvaal line is fitted with electric colour-light signalling as far as Ressano Garcia.

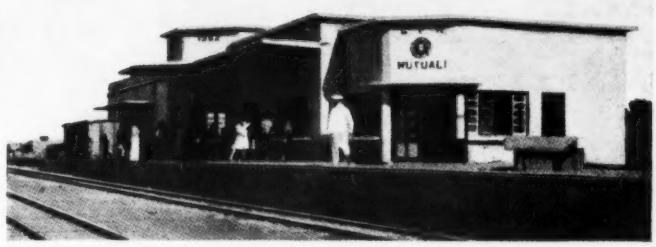
In 1930 the Portuguese Government embarked on a considered programme of railway development, and much work is now in progress. The so-called Tete system of lines, which leave the Beira-Nyasaland route not far from the frontier, a short piece of which is in operation, will form a direct route to the north-west frontiers of the territory and open up districts hitherto inaccessible and containing valuable products. The working of this short piece of completed route appears to have been suspended temporarily. The topography of the territory is such that heavy engineering works are seldom needed, and costs of construction are therefore relatively light. Locomotives of moderate power are found sufficient for most services. At present the railways suffer from being divided into isolated systems, although this is partly compensated for by road connecting services. Through bookings are in operation between rail, road, and air services. Traffic receipts have been rising since 1930, although there was a slight drop from 1937 to 1940, in both of which years the operating costs rose unduly and exceeded the receipts.

Extent of the Lines

The official figures in the 1941 report, the latest received, give the following details for the Portuguese-worked lines:—

	Miles
Lourenço Marques System:—	
Ressano Garcia (Transvaal) line, with Lingamo branch	58
Goba line, with Umbeluzi branch	39
Limpopo line, with Mangulane and Chinavane branches	112
Marracuene line, with Matadouro branch	21
	230
Inhambane and Gaza System:—	
Inhambane line, with Inharrime branch	58
Gaza narrow-gauge lines and branches	88
	146
Quelimane System	90
Mozambique System	294





Above: ***Bridge over the River Malema on the Mozambique Railway***

Above, right: ***Rolling stock material at Mutarara Station, at the southern end of the Tete Railway***

Right: ***Mutuáli Station, the present railhead of the Mozambique Railway***

There is thus a total of 760 route miles; all but 6¼ miles is single track. In addition, there are about 100 miles of siding tracks. The rolling stock comprises about 80 locomotives, a dozen or so railcars, some 60 to 70 coaches, and more than 1,500 wagons in service. The Beira and Trans-Zambesi Railways, both of which are British-operated lines, cover about 390 route miles.

The war has had noticeable effects on the traffic, both passenger and goods. Tourist traffic has naturally fallen away almost entirely, and there are various restrictions tending to discourage persons from travelling. This has markedly affected traffic on the Transvaal line. The number of vessels visiting Lourenço Marques and other ports has diminished; German, Italian, and Japanese ships have disappeared, while the demands of the shipping of the United Nations have caused many vessels to be diverted to other routes. Road transport and air traffic have both increased during the last year or so; the net balance on operating account, taking all services into consideration, is still lower than in 1939, but has improved since 1941.

Carriage Cleaning on the Southern Railway

Factors which ensure interior and exterior cleanliness

THE Southern Railway for long has enjoyed a high reputation for the cleanliness, both internal and external, of its rolling stock. That this standard has been maintained even in the difficulties of wartime has brought many compliments from the travelling public using the company's lines.

The fact that the Southern Railway system is largely electrified assists in the maintenance of clean vehicles, but in addition the company has a well-organised system of carriage washing and so forth. The rolling stock is classified into different groups and the maintenance cleaning is rostered to specified depots according to the staff and facilities available. Light cleaning is performed during the intervals of maintenance cleaning at terminal stations and depots before the stock is put into service.

Exterior coachwork is periodically treated with a chemical preparation which is allowed to remain on the surface until the congealed grime is loosened. The coaches are then passed through a carriage-washing plant where they are washed down with cold water. Alternatively, the washing off is performed by hand.

The exterior cleaning process is very efficacious. It is also economical and simple, and necessitates very much less labour than any hand-cleaning process yet tried. Tests and many years of experience have proved that it does not result in any material damage to the varnish or coachwork.

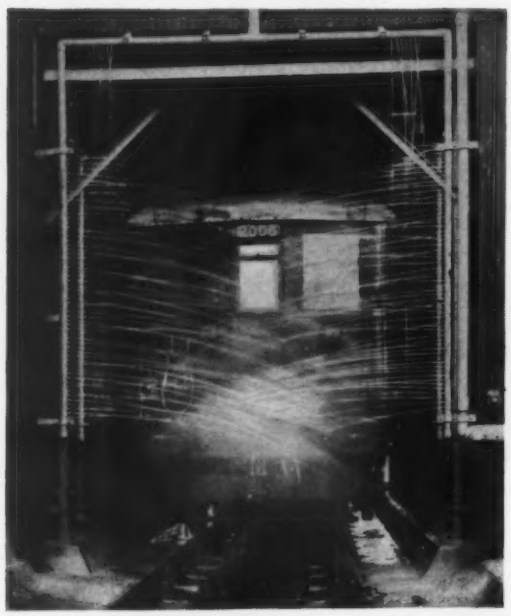
The interiors of the coaches are periodically vacuum cleaned by stationary vacuum-cleaning plant installed at the larger depots. The floors are also thoroughly scrubbed and the interior paint-work, namely panels and ceilings, is washed down and the upholstery and rugs cleaned as necessary at these depots.

Close contact is maintained with various departments in order that the cleaning materials, plant, and staff are kept up to date and in line with requirements. The result of this co-ordination is manifest in the satisfactory condition of the rolling stock.

The majority of the carriage cleaning staff today consists of women, who carry out all phases of the work both inside and outside, including the filling of roof water tanks. The responsibility for the organisation which is giving such excellent results is vested with the Traffic Department.

The mechanical carriage washing plants are by now fairly familiar to the public. The trains pass through a roofed structure open at each end between vertical rotating shafts carrying wet cloths which clean the outsides of the carriages as they pass through; the dirt finally sluiced off by jets of water. The Southern Railway has ten of these plants situated at Clapham Junction, Wimbledon Park, Fratton, Orpington, Slades Green, Gillingham, Norwood Junction, Streatham Hill, Brighton, and Stewart's Lane.

Generally stock goes through the carriage-washing machine whenever it passes through a depot so provided. For instance, West of England main-line stock would probably go through the Clapham Junction carriage-washing machine twice a week; Brighton main-line stock may pass through as frequently as once a day.



Above : One of the carriage-washing plants with the sprays and rotating cloths in action

Left : A carriage passing through one of the plants

Block courtesy] [*L.N.E.R Magazine*

The pre-war up Flying Scotsman crossing the border, hauled by an L.N.E.R. streamline Pacific No. 4492 "Dominion of New Zealand"

RAILWAY NEWS SECTION

PERSONAL

Mr. F. A. Bates, M.C., A.F.C., Deputy-Chairman, Cunard White Star Limited, has requested that he be relieved of that position, because of other increased responsibilities, and is to be succeeded by Sir Thomas A. L. Brocklebank, who is a Director of the company. Mr. Bates retains his seat on the board. Sir Thomas Brocklebank is Chairman of the Mersey Docks & Harbour Board and a Director of the London Midland & Scottish Railway Company.

We regret to record the death on September 6, at the age of 80, of the Rt. Hon. Reginald McKenna, Chairman of the Midland Bank Limited, and a Director of the Canadian Pacific Railway Company.

The Minister of Production has appointed Mr. J. A. Hopkinson to be his Regional Controller for the East & West Ridings Region, and to be Chairman of the East & West Ridings Regional Board, in succession to Mr. C. H. Crabtree, who resigned recently. Mr. Hopkinson was formerly in charge of a production department of Hadfields Limited.

Mr. G. P. Davison, who was Deputy Regional Controller, Northern Region, Ministry of Supply, has been appointed Regional Controller, Wales Region, in place of Mr. W. S. Steel, who has resigned to return to the British Thomson-Houston Co. Ltd.

We regret to record the death, after a long illness, of Mr. R. G. Woodward, a Director of Edgar Allen & Co. Ltd.

Lt.-Colonel Lord Dudley Gordon, who is Chairman of J. & E. Hall Limited, and is a past-President of the Federation of British Industries, and of the British Engineers' Association, has been appointed a Director of Hadfields Limited.

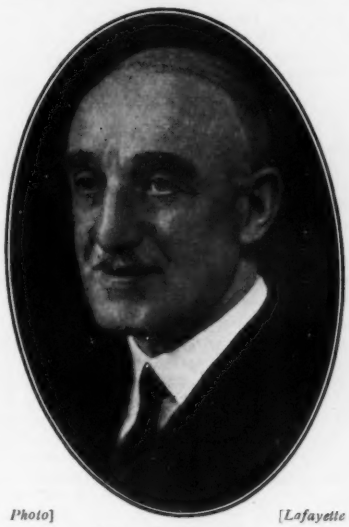
We regret to record the death, at the age of 83, of Mr. E. C. Straker, Chairman of Robert Stephenson & Hawthorns Limited, and a Director of the North British Locomotive Co. Ltd.

Mr. A. C. Macdiarmid, who is Chairman & Managing Director of Stewarts and Lloyds Limited, has been elected a Director of the Union Bank of Scotland Limited.

The late Mr Hans Renold, who founded the firm of .Hans Renold, Limited, left £472,565.

Mr. G. Phillips, District Locomotive Superintendent, Perth, L.M.S.R., who, as recorded in our August 20 issue, has been appointed District Locomotive Superintendent, Accrington, entered the service of the former G.S.W.R. at Carlisle, as an apprentice fitter, in 1907. He became a fitter in 1912, and leading fitter in 1919. Three years later he became an assistant in the office of the Chief Mechanical Engineer, Kilmarnock; and in 1923 went to Glasgow (St. Enoch) as Assistant Locomotive Foreman. He became Foreman Fitter at Polmadie in 1924, and Running Shed Foreman at Corkerhill in 1929. Five years later Mr. Phillips was appointed Locomotive Foreman, Ayr; he became District Locomotive Superintendent, Perth, in 1940.

Mr. J. Keyden, Assistant to Operating Manager (Motive Power), Glasgow, L.M.S.R., who has retired from the company's service, was educated at Stirling High School and Glasgow Technical College. In 1893 he joined the former Caledonian Railway as an apprentice engineer at Stirling, and completed his apprenticeship at St. Rollox Works in 1898. Mr. Keyden then had experience in several running sheds preparatory to his appointments as Assistant Foreman at Greenock in 1901, and at Carstairs in 1902. In 1907 he went to St. Rollox as Head Office Running Inspector, and in 1909 to Perth as District Locomotive Superintendent. He was appointed to the corresponding post at Motherwell in 1919, and at Polmadie, L.M.S.R., in 1924. Mr. Keyden was appointed Assistant to Divisional Superintendent of Motive Power for Scotland in 1935; and he took up the position from which he now retires in February, 1939.



Photo] [Lafayette

Mr. J. Keyden

Assistant to Operating Manager (Motive Power), Glasgow, L.M.S.R., 1939-43

The late Mr. F. H. Dashwood

Principal Assistant to Stores Superintendent, G.W.R., 1937-40

The King has conferred the dignity of a baronetcy of the United Kingdom upon the Rt. Hon. John Milne Barbour, of Hilden, in the County of Antrim. Sir John Milne Barbour is a Director of the Great Northern Railway Company (Ireland), a D.L., and M.P. for Co. Antrim in the Parliament of Northern Ireland. He was Minister of Finance from 1941 until the formation this year of the new Government.

We are informed that Mr. T. Ohmra has resigned the Presidency of the South Manchuria Railway, and has been succeeded by Mr. Kohiyama, formerly Chairman of the Showa Steelworks.

Mr. C. B. Mitcalfe Dale has been appointed Chief Engineer of the Engine Division, Brush Electrical Engineering Co. Ltd., and subsidiaries, on the resignation of Mr. H. V. Senior, who becomes Consultant to the company. Mr. Dale joined Petters Limited as Drawing Office Manager in 1934, and became Chief Designer in 1938. He was transferred to the Brush Electrical Engineering Co. Ltd. when the diesel and oil-engine business of Petters Limited was acquired by that undertaking in 1939. He was previously on the design staff of Ruston & Hornsby Limited.

Mr. F. H. Dashwood, formerly Principal Assistant to the Stores Superintendent, G.W.R., whose death we recorded last week, was the brother of Mr. C. R. Dashwood, Chief Accountant of that company. Mr. F. H. Dashwood entered G.W.R. service, and was posted to the Stores Department, in 1896. In 1906 he was placed in charge of the Correspondence Section, and later of the Order Section. In 1911 he was appointed Assistant Locomotive Works Storekeeper ,and, in 1918, Storekeeper, Swindon Locomotive Works, which position he held until 1923. He then was appointed Assistant, and in 1937 was promoted to be Principal Assistant, to the Stores Superintendent, and held the latter position until his retirement in 1940.

Mr. James Cecil Foster, A.M.I.Mech.E., Assistant to Divisional Superintendent of Operation (Motive Power), Crewe, L.M.S.R., who, as recorded in our August 20 issue, has been appointed District Locomotive Superintendent, Crewe, received his locomotive training in the workshops of the Midland Railway at Derby, and his technical education at Derby Technical College and Nottingham University College. During the war of 1914-19 he served in the Drawing Office of the Ministry of Munitions under Sir Henry Fowler, and saw service in France, Belgium, and Germany with Light Railway, Field, and Army Troops Companies, as a commissioned officer. He returned to the Midland Railway in 1920 as Assistant District Locomotive Superintendent, Sheffield, and received further training in motive-power matters at other depots. On the formation of the L.M.S.R. he was appointed Assistant to Superintendent of Motive Power, Derby. In 1931 Mr. Foster served on a committee which reported on the proposed modernisation of the company's motive-power depots, and in 1933 on another which dealt with the intensive

Mr. J. C. Foster

Appointed District Locomotive Superintendent, Crewe, L.M.S.R.

user of locomotives. In December, 1933, he was appointed Assistant to Divisional Superintendent of Operation (Motive Power), Crewe.

Mr. John C. Dooley, whose appointment as Manager of the Road Freight Department of the Great Southern Railways (Eire) was recorded in our August 27 issue, formerly carried on an independent road service which was purchased by the Great Southern Railways. At the time the North Mayo scheme was introduced, he was placed in charge of it, and his recent appointment is an indication of the success which he made in administering that scheme, not only in the conservation of petrol and tyres, but also from the viewpoint of establishing an efficiently-organised service on an economic basis. In view of the intention of the authorities in Eire to extend the system of goods-transport control and reorganisation, based mainly on control of petrol supplies, to most parts of Eire, the position of Manager of the Road Freight Department, Great Southern Railways, is likely to assume a considerably-enhanced importance in the near future.

Sir Frederick Heaton, Chairman of the Tilling Association Limited and of Short Bros. (Rochester & Bedford) Ltd., has been elected Chairman of the Watford & District Peace Memorial Hospital, of which the Earl of Clarendon is President.

B.B.C. Appointments

Sir Cecil Graves has resigned his post as Joint Director-General of the British Broadcasting Corporation, and Mr. Robert Foot, the remaining Joint Director-General, has been appointed sole Director-General, and chief executive officer, of the Corporation.

Mr. W. J. Haley, at present Joint Managing Director of the Manchester Guardian & Evening News Limited, and a Director of Reuters Limited and of the Press Association Limited, has been appointed to the newly-created post of Editor-in-Chief as from November 1.

Sir Noel Ashbridge, Controller, Engineering Division, has been appointed Deputy Director-General.

Mr. H. Bishop, Assistant Controller, Engineering Division, has been appointed Controller of that division.

Mr. R. T. B. Wynn, Senior Superintendent Engineer, has been appointed Assistant Controller, Engineering Division.

Mr. T. C. Elliott, who, as recorded in our September 3 issue, retired from the position of London Manager of the D.P. Battery Co. Ltd. on August 31, after 33 years' service with the company, and about 23 years in the position he has just relinquished, was born in 1878 and served his apprenticeship with Dennison, Parmeter & Barber, of Manchester. He was associated with much pioneer work, including the installation of the first De Laval steam turbine in this country at one of the Middlesbrough foundries of Pease & Partners Limited, and early telephone and electric-lighting apparatus. Later he joined the Train Lighting Department of J. Stone & Co. Ltd. and installed its equipment on the Midland, Great Central, Glasgow & South Western, Caledonian, and many other British railways, as well as on the Paris-Lyons-Mediterranean Railway, the French State Railways, the Belgian State Railways, and

Mr. T. C. Elliott

For many years London Manager, D.P. Battery Co. Ltd., who has retired

other Continental systems. He was stationed for a time at the Oerlikon Works, Zürich, after which he returned to J. Stone & Co. Ltd. In 1910 he joined the D.P. Battery Co. Ltd. as Inspector, and became Outside Engineer, and then London Manager. Mr. Elliott was associated with numerous applications of secondary cells to all branches of railway work, and became well known as an authority on every aspect of storage-battery engineering.

Mr. W. D. Havelock, who has been lent to the Colonial Office, to be Port Manager, Takoradi, previously held the position of Acting Dock Agent, King George Dock, Hull, L.N.E.R. (not, as stated in our September 3 issue, Manager, King George Dock).

The late Mr. P. J. Brady, who was a Director of the Great Southern Railways Company (Eire) from 1925 to 1933, and from 1935 to 1939, left personal estate in England and Eire valued at £25,434.

Left: The Rt. Hon. the Lord Leathers, C.H., Minister of War Transport, who recently returned to this country after accompanying the Prime Minister to Canada, at his desk in the Ministry

Right: Lord Leathers with Mr. P. J. Noel-Baker, M.P., Joint Parliamentary Secretary, Ministry of War Transport

TRANSPORT SERVICES AND THE WAR—206

L.M.S.R. Men Commissioned

Nearly 800 of the 35,000 L.M.S.R. employees now in the Forces are officers, and no fewer than 500 of these have risen from the ranks during the present war. Among these commissioned L.M.S.R. employees are thirteen lieut.-commanders, two colonels, a wing commander, a captain in the Royal Marines, and two women junior commanders in the A.T.S.

Holiday Train into War Special

An L.N.E.R. locomotive and a train crew ready to take holiday-makers from Manchester to a south-west coast resort at the height of the holiday season recently were pressed into service to become almost at a moment's notice a "North African Special." Spares were urgently needed in some of the 92 engines supplied by the L.N.E.R. for work in North Africa. Time was short if the convoy was to be caught, and the crew of the train responded to the call to get the valuable cargo to its destination.

Thinner Seasons to Save Paper

The Railway Executive Committee has announced that, to effect still further paper savings, railway season tickets are to be thinner and smaller. As existing stocks are used, new "austerity" cardboard tickets will be introduced at season ticket offices. They will be 0·015 of an inch thick. This should result in the release of 326 tons of paper pulp for war purposes, as some 326,077,500 season tickets a year are issued by the main-line railways and the London Passenger Transport Board.

Producer Gas in the West of England

Not only are the Southern National and Western National Omnibus Companies taking a prominent part in the development of producer-gas transport in the West of England, but they are also endeavouring to interest the passengers in their efforts to conserve the use of imported petrol. We recently noticed, in a Southern National bus in the Minehead area, a neat yellow label on the front bulkhead bearing the inscription "This vehicle is being propelled by producer gas obtained from coal supplied from mines in this country. 4,676 miles were run on producer gas by this vehicle during the month of July, thereby saving 917 gallons of imported fuel." The mileage and date are left blank, for completion by hand.

Railways and the Harvest

The British railways have been called on to shoulder a very heavy task in connection with this year's harvest, which the Minister of Agriculture estimates as 100,000,000 tons of food. The enormous increase in land under arable cultivation, which has been estimated at 19,000,000 acres compared with 12,000,000 acres in 1939, presented the railways with initial problems of distributing great quantities of fertilisers and seeds and new agricultural implements, including numbers of tractors, threshers, and combine-harvesters. Incidentally, the number of tractor implements has gone up from 200,000 to 1,175,000. The transport of agricultural implements and machinery involved the use of very large numbers of special type wagons which were in demand for other urgent work, and careful distribution of the available wagon stock had to be arranged to preserve a proper balance.

At present, the railways are handling the largest grain traffic they have ever experienced. It is estimated that 4,500,000 tons of home-grown grain requires to be moved, and this year's crop represents a 12½ per cent. increase over last year. Not only has the acreage under grain increased, but the yield per acre is expected to be exceptionally good.

Goods Transport Control in Eire

The further extension in Eire of the system of goods transport control and reorganisation, based mainly on control of petrol supplies, to which we made reference in our issue of August 27 (pages 198 and 214), has now become effective. On September 1, the Great Southern Railways Company introduced reorganised road merchandise services at reduced charges in the County of Roscommon and the eastern portion of the County of Galway, with the adjacent sections of the counties of Sligo, Leitrim, Longford, Westmeath, Offaly, and Tipperary. This area is thus added to County Mayo and West Galway, where the system has been in force for some time. The Great Southern Railways Company is the principal operator of the scheme, but some lorries of the heavier classes are being permitted to continue in service for private use if the owners are prepared to equip them with producer-gas apparatus.

The system is resulting in a considerable amount of opposition in the West of Ireland. For example, there was a largely attended public meeting of the Merchant Lorry Owners' Association held in Sligo Town Hall on August 16, when the view was expressed that the Government scheme was a direct interference with the constitutional rights of individuals. One speaker said that if private owners were to be compelled to fit gas producers to their vehicles in order to be allowed to run, the road lorries of the Great Southern Railways should be required to fit similar plant.

A public meeting held in Clifden on August 22 made a particular point of recent increases in road freight rates on the Clifden-Galway road. A letter from the Ministry for Industry & Commerce said the Minister was advised that the provisions of the Railways Act, 1933, requiring the company to provide an adequate substitute for abandoned railway services, did not imply that the railway rates previously in operation must not be exceeded on the replacing road services. A protest resolution described the increases as exorbitant, and an abuse of the company's monopoly. A branch of the Merchant Lorry Owners' Association was formed in Athlone at a meeting on August 29, and passed resolutions "condemning the G.S.R. monopoly and demanding its immediate withdrawal, and demanding that no restrictions be placed on the private owner after the war."

German-Italian Traffic through France

In connection with recent events in Italy, is is reported that the through goods services between Germany and Italy which have used the Basle-St. Louis-Mulhouse connecting line ever since the Franco-German armistice in 1940, were suddenly discontinued as from July 28. This section of line provided an important link in the western-most German-Italian transport route.

Container Traffic in France

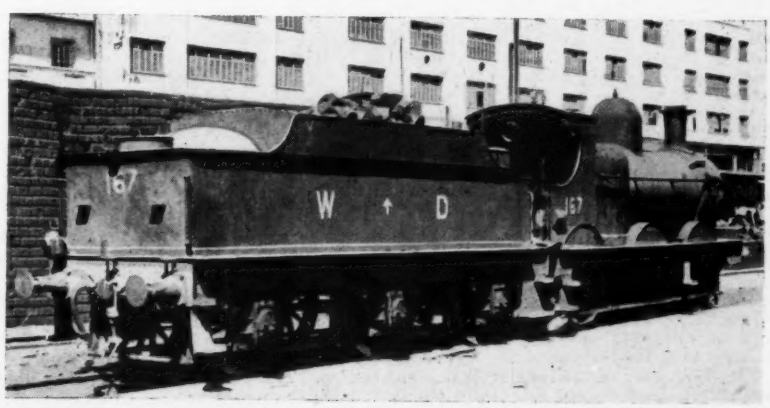
New French container-traffic regulations provide that containers, once unloaded, may be re-loaded only if the shipper has obtained a special permit. Permits will be issued only for consignments enabling containers to return to their home stations for re-loading by their habitual users. Non-compliance with these rules entitles the railways to refuse the conveyance of the goods concerned, and to discharge the consignment. Moreover, shippers may be fined fr. 1,000 for every container so misused.

Repairing French War Damage

During 1940 and 1941 various references were made in these columns to the restoration of war damage in France resulting from the 1940 fighting period; the most recent note was at page 102 of our issue of January 16, 1942. A French report has now been issued stating that substantial progress was made in the course of the year 1942 with the reconstruction of bridges and permanent way damaged in 1940, and that by the end of the year all bridges, viaducts, and other railway structures so damaged had been restored to traffic with the exception of 20 structures which were either permanently abandoned, or upon which work was deferred until after the war. March, 1943, saw the completion of the last three reconstruction jobs of the programme.

The Bellegarde-Annemasse Line

The reconstruction of the Longeray viaduct on the Bellegarde-Annemasse-Evian-les-Bains railway about 3 miles to the east of Bellegarde, has been sufficiently completed to enable through traffic between Bellegarde, Annemasse, and Evian-les-Bains to be resumed on August 1. Until then, trains plied only between Evian-les-Bains and Valleiry Station, 8 miles to the east of Bellegarde. Longeray-Léaz Station, being on the intervening section where



One of four 0-6-0 G.W.R. locomotives, formerly worked in the Swindon district, and now in service in Algeria. This view of No. 167 was taken in the neighbourhood of Algiers. These locomotives were among the railway rolling stock sent to North Africa to strengthen the inadequate lines of railway communication there

traffic was suspended, was thus not served for more than three years, as the viaduct is stated to have been blown up in June, 1940, for military reasons. Bellegarde is 21 miles to the south of Geneva, on the Lyons-Culoz-Geneva main line. It was formerly of some importance as the junction station on which was based the French railway traffic along the southern shore of the Lake of Geneva.

Bulgarian Transit Traffic

Until the two new lines now under constructions are finished (namely those from Gueschevo to Kumanovo and from Djumaia to Kocane), there is no direct railway communication between Bulgaria proper and the Bulgarian-occupied regions of southern Jugoslavia. Direct Bulgarian through traffic has been established, however, through part of Serbia, using the Tsaribrod to Nish and Nish to Vranje main lines.

War Frontier Obstacles to Traffic

Some of the artificial boundaries established by Germany in her " reconstruction " of occupied territories have acted as a severe deterrent to local traffic, by reason of having been drawn along lines which are not necessarily natural frontiers. The present boundary between Serbia and Croatia follows the lower course of the River Sava and thus isolates the Sabac-Koviljaca narrow-gauge railway from the remainder of the former system of the Jugoslav State Railways. Sabac itself is the terminus of a standard-gauge branch from Ruma, on the Zagreb-Belgrade main line. This branch is entirely in Croatia as far as Klenak, on the left bank of the River Sava, and then crosses the river to Sabac in Serbia. This bridge was damaged and has been repaired only recently. Under a recent agreement made between the Serbian and Croatian State Railways, traffic from the Sabac-Koviljaca Railway, and also from Sabac itself, can now be conveyed direct to Belgrade *via* the connecting railways in Croatia, and direct Serbian goods rates, in dinars, are applied. The Croatian section is Klenak-Ruma-Zemun ; the last-named is on the opposite bank of the River Sava from Belgrade, and is the present main frontier station between Croatia and Serbia.

German Trams in Wartime

Further reports of German tramway undertakings, received since the publication of our note of June 25 (page 650), continue to indicate the intensive user during 1942 of tramway services, in view of the withdrawal of buses.

Tram receipts of the Dresdner Strassenbahn A.G. in 1942 totalled Rm. 37,570,000, compared with RM. 32,560,000 in 1941, but bus receipts declined to RM. 710,000 (from RM. 1,680,000) as a result of the curtailment of the bus services. The company's share capital of RM. 18,000,000 is owned entirely by Dresden Municipality.

The report for 1942 of the Bochum-Gelsenkirchener Strassenbahnen A.G. emphasises that the number of passengers conveyed by the company's services exceeded by about 22 per cent. the 1941 total. The large-scale conveyance of vegetables by tram was undertaken in the year under review in order to relieve other forms of conveyance. Tram receipts rose substantially but bus receipts dropped as a result of the curtailment of the bus services.

Improved results for the year ended September 30, 1942, were also shown by the Kasseler Verkehrs-Gesellschaft.

The Rostocker Strassenbahn A.G., of Seestadt Rostock showed substantially improved results for 1942, mainly because of the intensification of passenger traffic. Passengers conveyed in 1942 totalled about 15 per cent. more than in 1941. The company's share capital is almost wholly owned by the Allgemeine Lokalbahn und Kraftwerke A.G., of Berlin.

Unprecedented results were attained in 1942 by the Strassburger Verkehrsbetriebe A.G., which took over from its French predecessor. The number of tram passengers increased by 77½ per cent., but the car-kilometres rose by only 58·8 per cent. The number of passengers conveyed over the company's suburban lines rose by 101·7 per cent. The increase in fares, introduced in 1942, brought no relief in respect of the traffic congestion.

Fuel-Oil Transport in the U.S.A.

About a year ago, an additional heavy task was imposed upon the U.S.A. railways, when they were called upon to convey fuel oil and petrol in increasing quantities to the north-eastern States. Despite a winter of unusual severity, they carried 800,000 barrels a day on average runs of well over 1,000 miles from the South and the Mid-west.

New U.S.A. Road Equipment

According to information recently supplied by Mr. Joseph B. Eastman, Director of the Office of Defense Transportation, it is expected that the total deliveries of new road transport equipment in the U.S.A. during the year 1943 will include 7,500 heavy motor lorries (including replacements for vehicles allocated to the Armed Services from the civilian rationing pool) ; 9,200 trailers ; 2,100 single-axle semi-trailers ; 3,000 motorbuses for town service ; 75 trolleybuses ; 7,400 bus bodies, the chassis for which are available ; 3,000 sedan conversions ; and 230 P.C.C. tramcars.

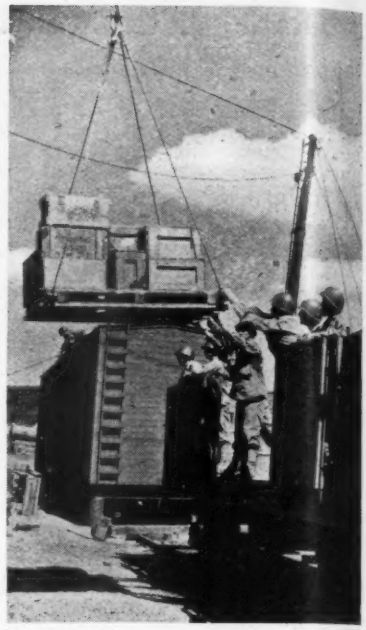
U.S.A. Troop Traffic

In April of the present year, about 1,750,000 troops a month, together with their accoutrements, were transported by the U.S.A. railways. This was exclusive of furlough travel. To accommodate troop traffic, about half of the country's supply of sleeping cars (3,000) are being used, plus 17 per cent. of all the day coaches (another 3,000). During overnight runs the soldiers ride in Pullmans, 39 men to a car, one man in each upper berth and two in each lower. To handle an Army division of 15,000 men, with all its equipment, requires nearly 1,300 vehicles, of which 338 are used for passengers and about 900 for goods. As many as 300,000 men and their arms may be transported in a single troop movement, perhaps across the continent, some 3,000 miles.

Renewed Sabotage in Croatia

Patriots in Croatia, realising the great importance to the Germans of the railway system, are concentrating more and more on its destruction. The Croat Quisling paper *Hrvatski Narod* reported on August 7 that: " Two railway guards removed two mines from the Koprivnica-Osijek line. This happened at the end of May. In June we had to repair the line from Koprivnica to Rosinja which the ' bandits ' blew up. By the end of the same month several other mines were successfully removed from various lines. At the beginning of July, two railway guards were killed in the attempt to remove a mine on the line from Slavonski Brod to Slobodnica."

In Bosnia the situation has become serious. The partisans, fighting near the railway from Sarajevo to Brod, stormed and captured the town of Maglay. Previous to this, they completely destroyed the railway stations at Doboschnica and Pragich, in addition to blowing up several miles of railway. Another partisan group, which operated on the Mostar-Sarajevo line, captured Oshtrozac station. The great railway bridge near Jablanica, which was demolished at the beginning of this year, has not been repaired yet, by reason of the constant attacks of local patriots. Railway communications between Sarajevo and the rest of Bosnia have been disrupted, and the narrow-gauge line from Sarajevo to Visegrad and Central Serbia has been destroyed.



Men in the Transportation Corps, U.S.A. Army, training at the Indiantown Gap (Pennsylvania) Military Reservation in loading and unloading supplies between rail and ship. The improvised " flat " being swung by pulley will be noticed

New Chinese Strategic Road

Further information has now been received from Free China concerning the new direct road connecting Chungking and Kwangyuan, to which we made reference in our July 23 issue, page 94. Kwangyuan is an important centre in the northern part of Szechwan Province, and a weekly road transport service thence from Chungking, for passengers, luggage, and commercial goods, was inaugurated in March over the new highway. The buses have a capacity of 24 passengers ; the luggage and commercial goods are carried by motor lorry. On the south-bound trip the cargo usually includes only valuable goods, since the cost of transport is greater than by shipment on the Kialing River. The trip from Chungking to Kwangyuan occupies 4 days. Buses leaving Chungking use the older Chengtu road as far as Pishan, and then run northward on the new cut-off road through Tungnan to Suining (on the Minyang), where they meet the Chengtu Kwangyuan highway. By by-passing Chengtu, the length of the trip is cut from 578 miles to 386 miles, a saving of 192 miles. At Kwangyuan, connections are made with services to Lanchow, in Kansu Province, and to various parts of Shensu Province. Lanchow is on the important line of communications with Suchow and Soviet Russia, along which supplies are received by China, including British and American goods through Persia and Russia.

Buenos Aires Underground Finances

A complicating factor in the working of the Buenos Aires Transport Corporation is its financial relations with the Compañia Hispano-Argentina de Obras Públicas y Finanzas. As recorded in *The Railway Gazette* of November 8, 1940, this Spanish syndicate, which is engaged on the construction of a system of underground lines in the city of Buenos Aires, suspended interest payments on its 7 per cent. debentures on the grounds that the corporation had not complied with its obligations to the company. It was reported that the company intended bringing an action against the corporation for the payment of 130,000,000 pesos, which it claimed was due to it under the corresponding Law. After prolonged negotiations and numerous claims and counter-claims, it was announced last May that the Argentine Government had issued a Decree assessing the capital of the company at 96,470,976 pesos, and authorising the corresponding issue of share certificates, with a view to its absorption into the corporation (see *The Railway Gazette* of August 6, pages 126 and 132). This ruling has been reversed by Decree issued by the new Government, cancelling the previous arrangement, and ordering an investigation into the company's finances.

The preamble to the Decree states that, according to the report of the Transport Control Board, grave irregularities would appear to have occurred during the negotiations which culminated in the issuing of the Decree of May 28, 1943, fixing the capital of the company at the figure mentioned above. In this connection the Decree refers to errors in valuation amounting to over 32,000,000 pesos on a total amount of 105,759,766 pesos which were discovered by the auditors in the course of assessing the capital of various private concerns taken over by the Spanish company. In respect of the agreement between the corporation and the Spanish company, the Decree points out that the debenture holders had been forced to accept, for some unexplained reason, a reduction of 10 per cent. in the amount of their capital holdings, with a further remission of 40 per cent. in the accrued interest due to them. The Decree also states that the corporation credited the company with the sum of 3,000,000 pesos in respect of earnings, which, according to the control board, is erroneous. The C.H.A.D.O.P.Y.F. liabilities, as given in the agreement, include an amount of 1,000,000 pesos, representing Spanish tax and stamp duties, and 775,000 pesos in respect of legal charges for which no corresponding vouchers can be traced.

The decree points out that, apparently, the reports of the control board had never been taken into account either by the previous Government or the former Transport Committee, when fixing the company's capital, despite the fact that this should have been approved by the control board, as the only body authorised to issue the share certificates. The Decree also instructs the Minister of the Interior to make a full investigation into the manner in which the special committee set up under Law No. 12,311, carried out its duties, in order that its civil and criminal responsibilities, if any, can be established. This applies to both Government officials and private representatives on the committee. Finally, the control board is ordered to draw up, within a period of 90 days, a report on the manner in which it recommends that the Spanish syndicate should be absorbed into the corporation, and stating the capital sum at which it estimates the value of the services.

Swedish Stations

A statement in the Swedish State Railways official journal, *S J Nytt*, shows that Stockholm Central is the largest station in Sweden in respect of the number of operating staff employed, which is 737, against 689 at Malmö Central (which is a larger station in point of size). Next come Stockholm North, Gothenburg Central, and Hallsberg, with 493, 488, and 360 respectively.

As far as the number of passenger tickets sold in 1942 was concerned, Stockholm Central led with 3,028,285; Gothenburg Central accounted for 1,374,844. The next highest figures were 1,214,264 (Malmö Central), 569,145 (Linköping Central), and 530,278 (Norrköping Central).

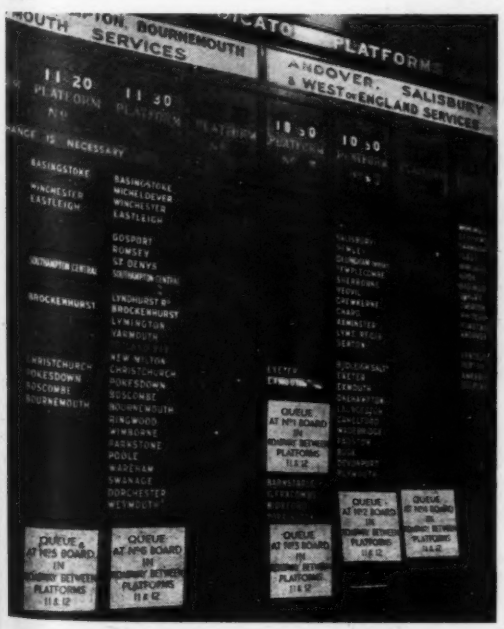
Receipts, however, showed Stockholm Central to be first, with kr. 30,600,543; Malmö Central second, with kr. 18,396,426; Stockholm North third, with kr. 14,652,169; Kiruna Central fourth, with kr. 13,373,168; and Gothenburg Central fifth, with kr. 13,360,130.

Holiday Passenger Queue System at Waterloo

As a result of the reduction in railway staffs, the importance of signs to direct passengers has increased; and the Southern Railway recently has evolved a system of direction signs for passengers at Waterloo Station, which avoids innumerable questions being put to the staff, gives the passengers confidence, and enables order to be maintained. The system is the result of the regular contact and investigation which is maintained at all times between the Traffic Manager's Divisional Superintendent, the Stationmaster, and the Advertising Department's Service Station, which produces hand-written signs at short notice.

Six pedestal boards each have been fitted with two movable panels, which are worded to meet the varying conditions of the traffic; so that, if it is found that a particular train can accommodate passengers for more stations than originally expected, notices showing the additional destinations can be substituted. The boards are placed at the heads of the queues, and each has a number. The train indicators, instead of referring to a platform number, refer to a queue number, so that when a passenger joins the queue he does not know from which platform he will be departing. This prevents congestion around the barriers. The queues are formed in selected parts of the station, so that there is an easier flow of troops and other passengers, mails, and luggage through the circulating area.

It is probable that the practice will continue, when large crowds are moving, after hostilities have ceased.



Above: The boards at Waterloo Station indicating queuing places for the various main services

Left: The train departure indicator, with the departure platform numbers left blank and directions for queuing given at the foot of the columns of stations served by each train

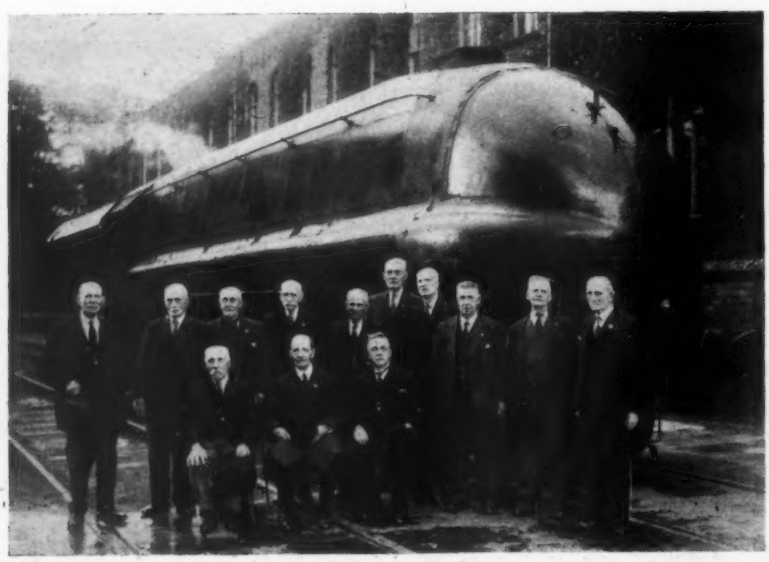
New Power Interlocking-Equipment on L.P.T.B. Lines

At the invitation of the London Passenger Transport Board, representatives of the technical press inspected on September 7 a new form of power-signalling apparatus which was put into operation on the next day on a section of the board's lines in the east of London. The equipment seen, however, was located elsewhere, and is not yet in use; but it was arranged to be operated by the visitors, to demonstrate its details and method of functioning. Those attending the demonstration were received by Mr. F. Scothorne, Public Relations Officer, L.P.T.B., and his Press Assistant, Mr. W. W. Howells, Mr. R. Dell, Signal Engineer, and Mr. H. W. Firminger, Assistant Signal Engineer, by whom the principles and constructional features of the apparatus, the full technical name for which is the power-worked lever remote-control signalling-system, were explained.

The principal characteristic of the system is the use of the ordinary lever-type power-frame, long employed by the board, controlled from a distance, either from another such frame, or by thumb-switch handles on a "panel," as seen with the various forms of relay interlocking now well known; its levers are moved to and fro by small air cylinders, controlled by electro-pneumatic valves, precisely as if a signalman were operating them directly by hand. Under this arrangement an extensive layout of points and signals can be controlled from a convenient central point through several remotely-controlled signal boxes, any or all of which can be worked individually by a member of the traffic staff should circumstances render it necessary or desirable. Each box of this kind is fully interlocked in itself, and is provided with all necessary track and other electric locking. The control circuits between it and the central point merely serve to initiate the movements of the levers, as called for by the traffic requirements, and convey certain indications to the signalman. If these circuits should be put out of action completely, each individual signal box remains fully safeguarded and can be worked on the spot with as much security and facility as if the remote-control apparatus were non-existent. Telephone-type cables and relays, therefore, can be utilised for the controls, leaving the heavier class of equipment for the protective and vital circuits in the signal boxes themselves.

The board already had found, in connection with its route-lever power signal-boxes (one of which controls a considerable area, having dense traffic at certain hours), that the provision of local boxes capable of being switched in and worked individually afforded certain advantages, lessening the risk of a complete suspension of service in the case of, say, fire or bomb damage. It accordingly decided to develop the idea a stage further in the equipment recently inspected, in an endeavour to realise the same object with the minimum of complexity and with apparatus which would be relatively simple to maintain, yet would retain the leading features of the power interlocking-frame which had served the board so well over a long term of years. Very little alteration is required to enable the frame to be worked by the air cylinders, which are arranged conveniently to act on a vertical shaft geared to each lever. Mechanical locking can be retained or electric locking used, as may be preferred. The electric locks which act on a lever, in its normal or reverse position as the case may require, with their attachments, have to be modified slightly so that they cannot be jammed under the action of the air cylinders, the effect of which is necessarily somewhat different from that obtained when working directly by hand. The levers have a simple registering device in place of the customary catch-handles; were the latter used they would need, of course, to be fixed out of action during the hours of remote-control working.

The war interrupted the work on the original installation of the new system (the one inspected by the party) but as signalling alterations and renewals had to be undertaken on another part of the board's railways, the opportunity was taken to complete a smaller one and to obtain an immediate practical trial. It is understood that an extensive installation will be undertaken under post-war development plans, covering three signal boxes remotely controlled from a central point on a busy multiple-track section of line. The board hopes to obtain from the system the known advantages of relay interlocking with certain others which it considers valuable, including those of easy maintenance and the rapid location and clearance of faults. The frequency of the train service renders these especially beneficial, and makes it undesirable to have large areas under the sole control of one signal box, with no alternative facilities for working locally in safety during an emergency.



Sir Thomas Royden, Chairman of the London Midland & Scottish Railway Company, with veteran employees of Crewe Locomotive Works during his visit in connection with the centenary of the latter, in front of locomotive No. 6245 "City of London"

Crewe Railway Works 100 Years Old

Crewe Locomotive Works, L.M.S.R., the largest railway-owned, and one of the best-known engine-building establishments in the world, celebrates its centenary this year. To mark the occasion, on Thursday, September 2, the Chairman of the London Midland & Scottish Railway Company, Sir Thomas Royden, visited the establishment and met many retired and present-day locomotive-builders. At an informal lunch held before his tour of the works, the Chairman also met a representative body of the Crewe Works organisation, including Messrs. R. C. Bond, Works Superintendent; J. E. Bagguley, Assistant Works Superintendent; L. G. Bird, Foreman, Erecting Shop; J. S. Ridgway, Foreman, Machine Shop; E. Smith, Piecework Setter; F. W. R. Timmis, Finished Work Inspector; G. Ellis, Chairman, Works Committee; H. Andrews, Secretary, Works Committee; and F. B. Townsend and H. Hyde, Clerical Staff, Works Superintendent's Office.

Much of the history of the steam engine revolves round the name of Crewe. Engineers trained there have established British locomotive tradition in the four corners of the globe. The locomotives *Columbine* (Crewe's first engine, now in the York museum), *Lady of the Lake* (Gold Medallist of the 1862 International Exhibition), *Queen Empress* (Chicago Exhibition, 1893), *Hardwicke* (67·2 m.p.h. in the race to Scotland in 1895), *Charles Dickens* (one million miles in ten years, and a total mileage of 2,345,107), *Royal Scot* (visitor to New York Fair, 1935), and *Coronation* (world's non-stop record-breaker in 1937, which later toured American railways) are but a few of the outstanding engines from the 6,623 which have been built at Crewe since 1843.

The large staff of men and women at Crewe are engaged also in repairing 2,000 locomotives a year; other activities include the manufacture of points, crossings, and signals, and the repair of the company's docks and harbour plant.

No flags, no celebrations, marked this important centenary: they can come after victory has been achieved. Crewe locomotive men and women are too busy at present keeping L.M.S.R. engines 100 per cent. fit so that they may cover their additional mileages, and haul the ever-mounting war freights. Only thus can the L.M.S.R. maintain its great contribution to the nation's war effort.

The Record U.S.A. Oil Movement

One of the most remarkable achievements of American railways since the war began has been the movement of oil, an operation of importance due to the diversion of seagoing tankers to British use, and the reduction in coastwise shipping in consequence of the danger of attack. The magnitude of the task may be measured by the fact that, whereas in the spring of 1941 the average daily handling of oil by the railways amounted to about 11,250 barrels, and by January, 1942, had not reached an average of more than 58,700 barrels, in no more than fourteen weeks from the latter date it had risen to 600,000 barrels and since then has increased steadily until, in the week ended May 5, 1943, the average daily movement was 980,652 barrels. The work was expedited by the introduction, from August 1, 1942, of a " block " system of operation, whereby the oil wagons were formed into trains from most dispatching points, and inter-railway competition was brought to an end by the fixing of 78 through routes from these assembly points to destinations. It was found that delays were still occurring in consequence of the detention of wagons, and on December 28, 1942, instructions were issued whereby 42 revised routes were established for complete trains of both full and empty oil wagons, with schedules at the same speeds in both directions; and arrangements were made for the distribution of much of the oil in the east by road tankers and barges, to secure the release of the empty wagons as early as possible. At present there are 19 lorry or channel routes for the movement of the oil across the United States, between the points at which the oil trains are assembled and broken up, and 62 feeder and distribution routes.

Schedules provide for daily departures, but, where the traffic is not sufficient to justify daily movement, tri-weekly departures are arranged. Trains of up to 100 bogie wagons in length have been arranged, but, in the interests of safety, and in view of the difficulty experienced by some lines in handling loads of this magnitude, the more general make-up is 70 to 75 full wagons, and up to 100 empties. Whereas the average daily distance covered by ordinary wagons in the United States has just reached the 40-mile mark, the average for oil wagons is now 200 miles. The record dispatch has been from Norris City, which is served by eight routes; the dispatch frequently exceeds 800 wagons a day, and in one such period recently amounted to 1,049 full oil wagons, some in 100-wagon trains, carrying 9,693,000 gal. of crude oil. A total of 10,000 wagons is assigned to the Norris City service, and the turn-round time is about 11 days. It is estimated that the distribution of oil by road in the east has saved 14,000 wagons, and various other measures have been helpful, such as the movement of oil in metal drums, corrugated-steel tanks, bag-type containers, Mareng cells, and other receptacles which enable the oil to be loaded in bogie box-wagons instead of in tank wagons. The first ten of a series of 50 " Flexitanks " were placed in service recently: these are bogie box-wagons which previously carried motor cars, but which have been fitted with canvas balloons, processed with rubber substitute, for the carriage of oil.

The daily average mileage of 200 now made by the tank wagons, however, is causing serious maintenance problems. In the first two months of 1943, no fewer than 125,885 defects were reported in tank wagons of sufficient moment to require the removal of the wagons concerned from their trains. The majority of these defects were connected with the braking: slid and flat wheels accounted for 26,394; brake-rigging defects for 17,548; and defects in piping and other parts of the brake system, rendering the brakes inoperative, for many more. Hot boxes and cut journals were reported in 6,203 cases; bogie defects, including springs and snubbers, in 18,137; and draft gear and underframe defects in 19,481. As these oil trains are operated, in suitable conditions, at speeds of up to 50 m.p.h., the consequences of defective equipment may be serious, especially as the derailment of such trains may lead—as it has done on several occasions—to disastrous fires. The demand for quick turn-rounds at terminals reduces the time available for examination and for maintenance; and it is plain that the situation is growing worse rather than better. Two improvements to stock are well under way: one is the substitution of steel wheels for chilled-iron wheels, and the other is the application of snubbers to the nests of springs on the wagons; but so far not more than 35 per cent. of the oil-wagon stock has been so treated. The opening of pipelines now in progress should help to ease the railway position.

Spanish Train Service Additions

The Spanish National Railways announced recently that some additional fast trains are to be placed in service shortly. The trains will operate from Madrid to Irun, Madrid to Bilbao, and Madrid to Santander. It is proposed that at least two fast trains daily will run on each of the three routes.

At present, in addition to the Madrid section of the Sud Express, which leaves the capital at 9 p.m. daily and arrives at Irun at 9.25 next morning, there is one daily fast train between the two places; this leaves Madrid at 10.45 p.m. and arrives at Irun next day at 12.30 p.m. There is an additional fast train on Tuesdays, Thursdays, and Saturdays, leaving Madrid at 9 a.m. and arriving at Irun at 9.15 p.m. In the reverse direction these trains operate as follow: Sud Express, Irun, dep. 10.55 p.m., Madrid arr. 11.10 a.m.; fast night train, Irun dep. 5.40 p.m.; Madrid arr. 8.25 a.m. The additional fast train operates on Mondays, Wednesdays, and Fridays; it leaves Irun at 8.15 a.m. and arrives at Madrid at 8.40 p.m.

To Bilbao there is one fast connection only, by way of the Sud Express, 9 p.m. from Madrid, as far as Miranda de Ebro, where it meets a connection which arrives at Bilbao at 8.30 a.m. The timing in the reverse direction is: Bilbao dep. 11.15 p.m. Miranda de Ebro arr. 1.55 a.m. Madrid arr. 11.10 a.m. Another fast connection is available three times a week by the Madrid-Irun express. This train meets a connection at Miranda de Ebro, which reaches Bilbao at 8.10 p.m. The reverse direction operates from Bilbao at 9.10 a.m. and links up with the southbound Madrid train.

Santander is linked by three trains weekly, on Mondays, Wednesdays, and Fridays. The trains leave Madrid at 8.45 a.m. and arrive at Santander at 9 p.m. In the reverse direction the trains run on Tuesdays, Thursdays, and Saturdays, and leave Santander at 8 a.m.; Madrid is reached at 9.10 p.m.

The number of trains on the Madrid-Cuenca line also is to be increased. At present three daily stopping trains operate in each direction, with a fourth, in each direction also, on Tuesdays, Thursdays and Fridays.

The Madrid-Lisbon service has been added to by the introduction, on July 21, of the Lusitania Express, mention of which was made in *The Railway Gazette* of August 6, page 147. This train, which is a sleeping-car express, operates three times weekly in both directions, on Tuesdays, Fridays, and Saturdays. It leaves Madrid at 8.20 p.m. and arrives in Lisbon at 10.18 a.m. Previously the best train took practically 19 hr. to cover the distance. The new train includes, in addition to first class sleeping accommodation, a number of second class sleepers.

To cope with the additional summer traffic to seaside resorts on the north-west coast of Spain, a supplementary fast train was put into operation between Madrid (Principe Pio Station) and Vigo, a section of the train connecting with La Coruña, on July 14. The train runs three times weekly. Previously there was only one fast train daily in each direction between Madrid and Vigo; this leaves Madrid (Principe Pio Station) at 5 p.m., and arriving at Vigo next day at 11 a.m. In the reverse direction, the train leaves Vigo at 4.10 p.m. and arrives at Madrid at 11.35 a.m. The trains carry sleeping and restaurant cars. The 5 p.m. from Madrid has a section for La Coruña, also with sleeping and restaurant cars; this section is detached at Monforte de Lemos and arrives at La Coruña at 11.20 a.m. In the reverse direction it leaves La Coruña at 4 p.m. and is attached at Monforte de Lemos to the 4.10 p.m. from Vigo.

L.M.S.R. Locomotive Named " City of Manchester "

The Lord Mayor of Manchester, Alderman J. S. Hill, on September 3 at Victoria Station, Manchester, named L.M.S.R. " Coronation " class locomotive No. 6246 *City of Manchester*. The engine is one of the latest of its class. The Lord Mayor, who was welcomed by Sir Robert Burrows, Deputy-Chairman of the London Midland & Scottish Railway Company, after the unveiling ceremony drove the locomotive, in charge of which were Driver Wilfred Wood, V.C., and Fireman Arthur McHugh, M.M., over a short distance.

The locomotive *City of London* was named last July by the Lord Mayor of London, Sir Samuel G. Joseph, at Euston. An account of this ceremony, and some details concerning the " Coronation " class locomotives, were given in our July 23 issue.

L.N.E.R. Tomato Traffic.—During the period June 1 to August 28, the L.N.E.R. has carried from the Lea Valley 3,346,653 packages of tomatoes, weighing together 22,732 tons. These have been loaded at three stations, Broxbourne, Cheshunt, and Waltham Cross. With two months of the season to run, the tonnage has eclipsed the total figure for the 1942 season. The weight dispatched in 1941 was 4,842 tons.

Institution of Railway Signal Engineers.—A general meeting of the institution will be held on September 15 at 5.30 p.m. at the Institution of Electrical Engineers, Victoria Embankment, London, W.C.2, at which the discussion held on June 19, 1942, on the President's address, delivered earlier in that year, will be continued.

Notes and News

County of London Plan Exhibition.—The date of the reopening of the County of London Plan Exhibition at the Royal Academy has been changed from October 25 to November 3.

International Railways of Central America.—The directors have authorised the call for redemption for the sinking fund on November 1 of $27,000 first mortgage 60-year five per cent. gold bonds, and £67,100 five per cent. first mortgage 60-year gold bonds.

One Million Customers use Euston "Railbar."—An average of 5,000 people a day are using the "Railbar" at Euston Station, which caters for "60 customers a minute." Since it was introduced by the L.M.S.R. in January, the "Railbar" has been visited by about one million customers.

Ferrocarriles Vascongados.—The report for 1942 of this Spanish railway company shows that the number of passengers conveyed was 4,500,000, or 200,000 more than in 1941. Goods traffic decreased by about 19,000 *tonnes* to about 550,000 *tonnes*. Net working receipts amounted to 9,900,000 pesetas; and 2,400,000 pesetas was available for distribution.

Canadian National Railways.—Gross earnings for the month of July, 1943, were $39,832,000, an increase of $6,699,000 in comparison with July, 1942. In the operating expenses of $31,136,000, there was an advance of $5,735,000, and the net earnings of $8,696,000 were $964,000 higher. Aggregate gross earnings for the first seven months of 1943, amounting to $250,816,000, were $47,768,000 greater than those for the same period of 1942, and the aggregate net earnings of $53,631,000 showed an improvement of $7,880,000.

Canadian Pacific Railway Company.—For the month of July last gross earnings amounted to $26,643,000, an increase of $4,717,000 in comparison with July, 1942. In the working expenses of $22,713,000 there was an advance of $4,055,000, and the net earnings of $3,930,000 showed an improvement of $662,000. Aggregate gross earnings from January 1 to July 31, 1943, were $162,875,000, an increase of $19,916,000 in comparison with the same period of 1942, but the aggregate net earnings of $25,133,000 were $84,000 lower.

Railway Fuel Economy.—Representatives of the British railways' fuel economy committee, under the chairmanship of Mr. M. G. Bennett, met a similar committee of the Ministry of Fuel & Power, under the chairmanship of Dr. E. S. Grumell, in London, on September 2, to discuss plans for a greater economy in railway fuel. A meeting to inaugurate a fuel economy campaign is to take place towards the end of September. Sir James Milne, Chairman of the Railway General Managers' Conference, will preside and Major G. Lloyd George, Minister of Fuel & Power, will address the meeting.

Coast Lines Limited.—At the annual general meeting of Coast Lines Limited on September 1, the Chairman, Sir Alfred Read, in the course of his address said that at the previous annual meeting it had been suggested that the coasting liner companies should consider coming together without losing their individual status to take advantage of co-operation and internal economics. Many meetings had been held within the coasting liner industry, but he regretted that so far nothing tangible had resulted, though negotiations were still going on. It was, perhaps, not the opportune moment to say anything as to the future of internal transport by rail, road, sea canal, or air. He was an individualist and a firm believer in private enterprise but he was not averse to being associated with schemes of co-ordination if these would bring about a greater measure of efficiency and economy in the coasting liner business.

Charles Roberts & Co. Ltd.—Trading profit, interest, etc., for the year to March 31 last, were £492,822, against £434,438 for the previous year. Net profit was £59,692, against £47,190. Final ordinary dividend is 10 per cent., making 15 per cent., the same as for the previous year. Debenture sinking fund received £16,874, against £6,874, and £5,444, against nil, is written off goodwill. The amount carried forward is £32,138.

Accident to Lackawanna Limited.—Twenty-seven persons are stated to have been killed, and about 150 injured, on August 30, when the Lackawanna Limited, of the Delaware, Lackawanna & Western Railroad, travelling between New York and Buffalo, came into collision with a goods engine near Wayland, in western New York State. Both locomotives, and several coaches, were derailed. The goods locomotive is said to have been entering the main line from a siding as the passenger train approached.

Road-Transport Education.—The composition of the committee appointed by the conference on road-transport education, convened by the President of the Institute of Transport on July 7 (see our July 30 issue), will be as follows: Messrs. R. Stuart Pilcher (Chairman), R. Beveridge, R. Birch, W. Bradley, J. G. Docherty, S. R. Geary, T. Gray, C. F. King, J. W. Ramsbottom, R. W. Sewill, H. Schofield, R. A. B. Smith, B. G. Turner, G. S. Vickary, and F. W. Crews (Honorary Secretary). The first meeting of the committee is due to be held on September 16.

Compañia Auxiliar de Ferrocarriles.—An increase has been approved in the share capital of this Spanish wagon-building concern from 50,000,000 pesetas to 80,000,000 pesetas. The company has issued 60,000 shares with a face value of 500 pesetas each, and old shareholders have been offered an option in the proportion of three new shares to five old shares. In addition to building railway vehicles and other material, the company, the report for 1942 of which was given in our August 20 issue, is concerned with the purchase and sale, and with the hiring of rolling stock.

Locomotive Whistles as Fire Warnings.—Special instructions have been issued to railway staffs as to the prevention and fighting of fires in plantations, woods, orchards, and market gardens, and on agricultural land. Permanent-way men periodically clear undergrowth which may constitute a source of danger and keep a sharp look-out for any signs of fire on linesides or adjoining lands. Enginemen who see a fire which is not being attended to, and who consider that there is a danger of its spreading, sound the code whistle-signal (one crow, one long blast, one crow), repeating the signal as they pass the next station, signal box, or crossing-keeper's hut. On hearing this signal, or otherwise receiving news of a fire, lineside signalmen call out available staff and fire-fighters.

Institute of Transport Meetings.—Sir William Wood will deliver his Presidential Address to the Institute of Transport at a meeting to be held at the Institution of Electrical Engineers, London, W.C.2, on October 12, 1943, at 5 p.m. He has accepted invitations further to those noted in our August 27 issue, to visit local sections as follow: Midland Section, at Birmingham, on November 19, 1943; Western Section, at Bristol, on April 28, 1944. The institute proposes to arrange luncheons, to be followed by addresses, on the following Fridays during the session: November 12, and December 3, 1943; and February 4, and March 3, 1944. Informal lunch-hour meetings are proposed for Tuesdays, November 23, 1943; and January 18, February 22, and March 28, 1944. Details will be announced later.

L.M.S.R. War Savings Groups.—The Crewe Locomotive Works Savings Group reached a weekly total of £9,723 in a recent "Wings for Victory" week. Nearly £100,000 now stands to the credit of the

British and Irish Railway Stocks and Shares

Stocks	Highest 1942	Lowest 1942	Prices Sep. 3, 1943	Prices Rise/Fall
G.W.R.				
Cons. Ord.	58	39	61½	+ ½
5% Con. Pref.	115½	105½	111	—
5% Red. Pref. (1950)	109½	103½	107	—
5% Rt. Charge	133½	123½	126½	—
5% Cons. Guar.	130½	121½	122½	—
4% Deb.	117	105	108½	—
4½% Deb.	118	108	110½	—
4½% Deb.	125	113	118½	—
5% Deb.	137	127	129	—
2½% Deb.	77	70	75	—
L.M.S.R.				
Ord.	28½	16½	32½	+ ½
4% Pref. (1923)	63½	50½	61½	—
4% Pref.	76½	67½	75½	+ ½
5% Red. Pref. (1955)	103½	94½	103½	—
4% Guar.	104½	97½	100	—
4% Deb.	108½	101½	104½	—
5% Red. Deb. (1952)	111	107½	109½	—
L.N.E.R.				
5% Pref. Ord.	9½	2⅞	9⅞	+ ⅛
Def. Ord.	5	1⅛	4½	+ ⅛
4% First. Pref.	62	49½	61	— ½
4% Second Pref.	32½	18½	33	+ ½
5% Red. Pref. (1955)	95½	79	97½	—
4% First Guar.	98	88	96½	—
4% Second Guar.	90	78	89½	—
3% Deb.	85	76	80½	—
4% Deb.	106½	100½	102½	—
5% Red. Deb. (1947)	106	103	104	—
4½% Sinking Fund Red. Deb.	106	102½	105½	—
SOUTHERN				
Pref. Ord.	77	61½	76	—
Def. Ord.	23½	14½	25	+ ½
5% Pref.	112½	104	110	—
5% Red. Pref. (1964)	110½	105½	111½	—
5% Guar. Pref.	131	121½	123½	—
5% Red. Guar. Pref. (1957)	115½	109½	112½	—
4% Deb.	116	104½	107½	—
5% Deb.	134	125½	129½	—
4% Red. Deb. (1962–67)	110½	106	107½	—
4% Red. Deb. (1970–80)	111	106½	107½	—
FORTH BRIDGE				
4% Deb.	109 7/16	108	106	—
4% Guar.	105½	100	104½	—
L.P.T.B.				
4½% "A"	122½	111	117½	—
5% "A"	131½	122	127½	—
3% Guar. (1967–72)	95⅝	97½	98½	—
5% "B"	121	111½	115½	—
"C"	56½	38	66	— 1
MERSEY				
Ord.	27½	20½	32	—
3% Perp. Pref.	61½	56½	61	—
4% Perp. Deb.	102½	99½	103	—
3% Perp. Deb.	80½	76	78	—
IRELAND				
BELFAST & C.D.				
Ord.	9	4	9	—
G. NORTHERN				
Ord.	29¾	12½	19	—
G. SOUTHERN				
Ord.	25	10	16½	+ 1
Pref.	29	12¾	20	+ ½
Guar.	53	35½	42	+ 5
Deb.	71½	55½	63½	+ 3½

§ ex-dividend

group. At Derby the Locomotive Departments Group's total is £56,376; the Carriage & Wagon Works Group has subscribed £22,095.

Accident to Congressional.—It is reported that a number of coaches of a section of the Congressional were derailed on September 6. This train operates over the Pennsylvania Railroad between New York and Washington; the section concerned was eastbound. The number of deaths is reported as 79.

Spanish Railway Electrification.—According to a Reuters report, quoting the official German news agency from Madrid, the Spanish railway network is to be electrified on a considerable scale during the next twelve years. The plans provide for about 4,000 km. (about 2,485 miles) of single track to be converted at the rate of 340 km. (210 miles) a year. The cost is estimated at about 1,600 million pesetas (approximately £4 millions).

Increased Goods Rates in Northern Ireland.—The railway companies operating in Northern Ireland, with the exception of the Belfast & County Down Railway, have given notice of an alteration in goods rates to operate from October 1. Special or exceptional rates are to be replaced by published scales for the carriage of various articles by goods train and of parcels, perishable, and other traffic by passenger train, booked through between stations on any of the companies' lines and stations on the Great Southern Railways. Carriage will be at owner's risk, and the owners in many cases will have to load and unload the goods. These measures are understood to have been made necessary by increasing expenditure, and by claims for loss and damage.

British and U.S. Trade with S. America.—Accordng to a Reuters report, Mr. Eric Johnston, President of the United States Chamber of Commerce, said at Washington, that he could not see any reason for the apprehension felt in some British quarters that Great Britain had lost South American trade contracts to the United States. Although Great Britain had been unable to ship goods to South America during the war, the U.S.A. had had the same problems. There would be plenty of opportunity after the war for Great Britain and the United States both to do more business with South America than before, and he hoped that it would be on a competitive basis. As a method of approach to post-war planning, Mr. Johnston suggested meetings first of the business men of Great Britain and America.

C.N.R. Issue of Securities. — A measure authorising the Canadian National Railways to issue securities, not exceeding $6,046,300 in principal amount, to meet capital expenditures or capital indebtedness during 1943, and to authorise certain other financial arrangements, has passed the final stage in the Canadian House of Commons. The House also has put through all stages the annual Bill reappointing the auditors of the C.N.R.

Argentine Foreign Trade. — The foreign trade of Argentina over the period January to May of this year showed a favourable balance of 374,511,000 pesos (£22,470,660), an increase of 245,206,000 pesos (£14,712,360) over the same period of last year. Exports and imports were as follow :—

	Tons	Value Pesos
Exports	1,835,000	730,714,000
Imports	1,336,000	356,203,000

Exports in the first five months of 1942 were valued at 725,918,000 pesos (£43,555,080). Exports in June last totalled 317,000 tons, valued at 149,421,000 pesos (£8,965,260).

Chilean State Railways Position.—A memorandum issued recently by the Chilean State Railways explains the reasons for curtailing services at a time when abnormal demands are being made for railway facilities. The main difficulty is stated to be lack of rolling stock, acquisition and construction of which in the last 15 years has been limited, and bears no relation to the increased transport needs resulting from industrial developments. The memorandum contains the warning that, as the delivery of material ordered from the United States may be delayed, the prospects of an improvement in railway services are not promising, especially as the fuel situation has become worse. Among the recent increases in goods rates is one of 100 per cent. on wines' and other alcoholic liquors.

Mr. G. L. Darbyshire, Vice-President, L.M.S.R. (left), inspecting exhibits after opening the second annual show of the L.M.S.R. Headquarters Allotment Society. Next to Mr. Darbyshire are (left to right) Sir William Stanier, Chief Mechanical Engineer, and Mr. S. J. Symes, Chief Stores Superintendent, L.M.S.R., and Mr. G. R. Smith, Secretary to the company

Contracts and Tenders

The South Indian Railway has placed an order, to the inspection of Messrs. Wolfe Barry, Robert White & Partners, with Owen & Dyson Limited, for 500 steel rack-bars for the Nilgiri Railway.

Below is given a list of orders placed recently by the Egyptian State Railways :—

Steel, Peech & Tozer Branch of the United Steel Cos. Ltd. : Spring steel.

Horsburgh & Francis Limited : Indiarubber tape.

Callender's Cable & Construction Co. Ltd. : Abrasive insulating tape.

Turner Bros. Asbestos Co. Ltd. : Insulating boards.

Siemens Bros. & Co. Ltd. : Insulating paper, ebonite sheets and rods, porous pots, transmitter, condensers.

General Electric Co. Ltd. : Train lighting materials, electric bulbs, insulating cloth, fibre sheets, telephone and telegraphic materials.

British Tabulating Machine Co. Ltd. : Hire of "Hollerith" tabulating equipment.

Rivet, Bolt & Nut Co. Ltd. : Bolts and nuts.

Tubes Limited : Steel tubes.

H. J. Skelton & Co. Ltd. : Rivets.

English Steel Corporation Limited : Bolster springs.

R. A. Lister & Co. Ltd. : Piston scraper rings.

Post Office Stores : Telephone and telegraphic materials, condensers.

Reavell & Co. Ltd. : Compressor spares.

Alley & MacLellan Limited : Pneumatic spares.

Consolidated Pneumatic Tool Co. Ltd. : Pneumatic spares.

Robert Hyde & Son Ltd. : Buffer sheets.

Stewarts and Lloyds Limited : Steel pipes.

Power Flexible Tubing Co. Ltd. : Flexible tubing.

Taylor Brothers & Co. Ltd. : Tyres.

W. T. Henley's Telegraph Works Co. Ltd. : Copper wire.

British Insulated Cables Limited : Cable.

Callender's Cable & Construction Co. Ltd. : Cable.

Caprotti Valve Gears Limited : Ball bearings, Caprotti spares.

Hulburd Patents Limited : Seamless copper joints.

Armstrong Oiler Co. Ltd. : Lubricating pads.

R. L. Ross & Co. Ltd. : Valves.

Whitecross Co. Ltd. : Nails.

Guest, Keen & Nettlefolds Limited : Nails.

Morgan Crucible Co. Ltd. : Bronskal brushes.

Davies & Metcalfe Limited : Cones.

Vacuum Brake Co. Ltd. : Cylinders.

Gresham & Craven Limited : Injectors.

Dewrance & Co. Ltd. : Cocks.

British Metallic Packings Co. (1933) Ltd. : Spring rings.

C. C. Wakefield & Co. Ltd. : Ratchet wheels.

Ibbotson Brothers & Co. Ltd. : Springs.

North British Locomotive Co. Ltd. : Coupling rods.

Whitelegg & Rogers Limited : Lubricators.

Crossley Bros. Ltd. : Plug-type lamps.

Clyde Crane & Engineering Company : Plugs.

Chloride Electrical Storage Co. Ltd. : Cells.

Johnson & Phillips Limited : Potential transformers.

Babcock & Wilcox Limited : Machine parts.

Ruston & Hornsby Limited : Machine parts.

Metropolitan-Vickers Electrical Export Co. Ltd. : Copper joint-rings and carbon brushes.

Thomas Firth & John Brown Limited : Segmental-type saws.

B. & S. Massey Limited : Catgut pullcord.

Edgar Allen & Co. Ltd. : Axlebox liners.

Norton Grinding Wheel Co. Ltd. : Grinding wheels.

John Oakey & Co. Ltd. : Abrasive cloth belts.

Tilley Lamp Company : Vapour lamps.

Holden & Brooke Limited : Steam railcar spares.

Richard Klinger Limited : Steam railcar spares.

Sentinel Waggon Works (1936) Limited : Steam railcar spares.

Vacuum Brake Co. Ltd. : Steam railcar spares.

G. & J. Weir Limited : Steam railcar spares.

Yorkshire Patent Steam Wagon Company : Steam railcar spares.

Railway Stock Market

Although sentiment was assisted by the war news, there was no pronounced improvement in the volume of business in the stock and share markets. Nevertheless, the better tendency in values was fairly widely spread and extended from British Funds to industrial shares; but in most directions best prices were not held and gains on balance were moderate. During recent months there has been a steady rise in industrial and most other equity securities, due to expansion in demand from time to time and to the firmness with which most stocks and shares of the equity type are held. The latter arises in a large measure from willingness to take more than a short view and to assume that after the war there may be general recovery in earnings and dividends of industrial companies. Compared with a week ago there has been moderate improvement in home railway junior stocks, but no marked increase of demand was in evidence, despite general recognition of the attractive yields. The dividend outlook of the railways is fairly clearly defined, because it appears reasonable to expect that, while the existing rental agreement is in force, dividends at around last year's rates will continue to be forthcoming. As events have turned out, it is true that under the agreement the railways and their stockholders have made considerable sacrifices, and it is only right that this should be borne in mind by the authorities and the public. It is possible, however, that the continued expression of dissatisfaction and of hopes of the possibility of a revised rental agreement have had the effect of making railway stocks less popular than might otherwise have been the case. There is no logical reason why railway junior stocks should be valued on a basis showing an average yield of twice that on industrial shares, unless railway stockholders are to be treated very unfairly under any post-war settlement. This can be considered as highly improbable. The wartime sacrifices of stockholders should prove a helpful factor in any post-war negotiations, particularly having regard to the right of the railways to their standard revenues under the Act of 1921.

Argentine railway securities were again better on balance, although best prices recorded in the past few days were not held. Sentiment was assisted by the news of the financial mission of the railways which is to visit the Argentine, and is a sequel to the interchange of directors by the leading companies. This has naturally aroused hopes that at long last there may now be a better prospect of the railways receiving reasonably fair treatment in respect of fares, rates and exchange. The British-owned Argentine railways have not had a square deal for a very long time, and the position, of course, must be expected to be reflected in the results for the past financial year. An additional point which it is hoped the Argentine Government realises is that considerable financial resources will be needed to deal with arrears of railway reconstruction and extension work after the war, if the Argentine is to derive full benefit from the demand for products required for the rehabilitation of Europe.

Compared with a week ago, Great Western ordinary has improved from 61 to 61⅜ at the time of writing; the guaranteed stock remained 122½, the 5 per cent. preference at 111, and the 4 per cent. debentures at 108½. After improving to 32¾, L.M.S.R. ordinary eased to 32⅝, which, however, compared with 32½ a week ago. This railway's senior preference was better on balance at 75½, and at 61 the 1923 preference was the same as a week ago. L.N.E.R. first preference was maintained at 60¾; the second preference, after reaching 33⅛, eased to 33, which, nevertheless, compared with 32⅝ a week ago; the second guaranteed moved down to 89. Southern deferred was slightly better on balance at 24⅞; the preferred declined from 76¾ to 76. London Transport "C" was also fractionally lower at 65¾.

Argentine railway stocks failed to hold best prices, but in most cases were better than a week ago. Elsewhere, small gains were shown in Nitrate Rails ordinary and in Antofagasta preference. French railway sterling bonds tended to rally. Canadian Pacifics were firmer.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ending	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1941/2	No. of Weeks	Aggregate traffics to date: Totals 1942/3	Aggregate traffics to date: Totals 1941/2	Aggregate traffics to date: Increase or decrease	Shares or stock	Prices: Highest 1942	Prices: Lowest 1942	Prices: Sept. 3 1943	Yield % (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	29.8.43	28,790	+ 11,420	34	967,280	740,290	+ 226,990	Ord. Stk.	14	7⅜	14⅜	Nil
	Argentine North Eastern	753	28.8.43	14,430	+ 690	9	118,050	117,702	+ 348	"	6¼	3	7	Nil
	Bolivar	174	July, 1943	4,991	+ 1,021	31	37,405	31,401	+ 6,004	6 p.c. Deb.	19⅜	10	20⅛	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds	20½	9	20	Nil
	Buenos Ayres & Pacific	2,807	28.8.43	82,800	— 3,300	9	669,720	722,340	— 52,620	Ord. Stk.	7¼	4	6½	Nil
	Buenos Ayres Great Southern	5,080	28.8.43	139,560	+ 9,120	9	1,149,780	1,076,100	+ 73,680	Ord. Stk.	12½	7⅛	14⅜	Nil
	Buenos Ayres Western	1,930	28.8.43	46,860	— 7,320	9	386,100	357,120	— 28,980	"	12⅜	6	13½	Nil
	Central Argentine	3,700	28.8.43	147,018	+ 16,488	9	1,046,988	1,055,232	— 8,244	"	9½	4 7/16	9⅜	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	3⅜	2½	5	Nil
	Cent. Uruguay of M. Video	972	28.8.43	27,651	+ 8,226	9	249,051	174,017	+ 75,034	Ord. Stk.	8	4	5¼	Nil
	Costa Rica	262	July, 1943	23,251	+ 10,490	4	23,251	12,761	+ 10,490	Stk.	16½	11	14	Nil
	Dorada	70	July, 1943	26,425	+ 9,165	28	146,917	98,475	+ 48,442	1 Mt. Db.	90½	89	94½	6⅜
	Entre Rios	808	28.8.43	20,820	+ 3,096	9	162,648	148,278	+ 14,370	Ord. Stk.	33	4½	7	Nil
	Great Western of Brazil	1,030	28.8.43	14,700	+ 5,300	34	530,000	344,000	+ 186,000	Ord. Sh.	9/-	9/-	40/-	Nil
	International of Cl. Amer.	794	June, 1943	$591,995	+ $62,010	24	$3,904,639	$3,689,137	+ $215,502	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	1⅛	5/3	1⅛	Nil
	La Guaira & Caracas	22¾	Aug., 1943	7,285	— 2,540	34	68,425	54,765	+ 13,660	5 p.c. Deb.	11½	5	85	Nil
	Leopoldina	1,918	28.8.43	33,774	+ 3,914	34	1,161,772	1,032,457	+ 129,315	Ord. Stk.	6¾	3½	5¼	Nil
	Mexican	483	21.8.43	ps. 369,900	+ ps. 85,100	7	ps.2,914,800	ps. 2,276,200	+ ps. 638,600	Ord. Stk.	1	⅛	1⅛	Nil
	Midland Uruguay	319	June, 1943	15,163	+ 300	32	184,706	167,328	+ 17,378	—	—	—	—	—
	Nitrate	382	31.8.43	8,898	— 679	34	102,148	125,118	— 22,970	Ord. Sh.	77/-	3½	76/3	Nil
	Paraguay Central	274	27.8.43	$5,200,000	+ $1,375,000	9	$44,487,000	$32,370,000	+ $12,117,000	Pr. Li. Stk.	53	40	72½	5½
	Peruvian Corporation	1,059	June, 1943	104,734	+ 22,552	52	1,045,065	915,630	+ 129,435	Pref.	19⅝	5½	14⅛	Nil
	Salvador	100	June, 1943	c 106,000	+ c 60,000	50	c 1,243,000	c 1,005,172	+ c 237,828	—	—	—	—	—
	San Paulo	153½	22.8.43	50,794	+ 11,940	33	1,407,350	1,235,200	+ 172,150	Ord. Stk.	59	41	59	3⅜
	Taltal	160	July, 1943	3,515	— 2,975	33	52,326	62,000	— 9,674	Ord. Sh.	41/-	23/-	28/9	Nil
	United of Havana	1,301	28.8.43	42,898	+ 1,629	9	416,480	348,766	+ 67,714	Ord. Stk.	8½	2½	5½	Nil
	Uruguay Northern	73	June, 1943	1,438	+ 399	52	17,255	14,305	+ 2,950	—	—	—	—	—
Canada	Canadian Pacific	17,034	31.8.43	1,896,000	+ 369,600	34	37,946,200	33,002,600	+ 4,943,600	Ord. Stk.	16¼	9 1/16	16½	Nil
India†	Barsi Light	202	31.7.43	28,695	+ 5,010	17	91,770	63,285	+ 28,485	—	—	—	—	—
	Bengal & North Western	2,090	Nov., 1942	264,975	— 33,087	8	449,400	561,082	— 111,682	—	—	—	—	—
	Bengal-Nagpur	3,267	Feb., 1943	932,775	+ 84,975	46	10,031,400	9,111,000	+ 920,400	Ord. Stk.	102½	88	102½	3⅜
	Madras & Southern Mahratta	2,939	20.5.43	268,500	+ 56,293	7	1,402,950	1,113,027	+ 289,923	"	105½	87	107½	6⅜
	Rohilkund & Kumaon	571	Nov., 1942	555,750	+ 5,072	8	115,950	99,909	+ 16,041	"	—	—	—	—
	South Indian	2,349	20.5.43	189,379	+ 5,937	6	975,109	890,602	+ 84,507	"	103⅜	88⅞	103½	4⅛
Various	Egyptian Delta	—	10.6.43	13,955	+ 52,968	10	98,431	75,685	+ 19,746	Prf. Sh.	5½	1½	2½	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	44	35	37½	9⅛
	Midland of W. Australia	277	30.6.1943	37,349	+ 12,545	52	392,864	254,759	+ 38,105	Inc. Deb.	95	90	100	6
	Nigerian	1,900	29.5.43	64,646	+ 14,837	7	576,788	453,619	+ 123,169	—	—	—	—	—
	South Africa	13,291	17.7.43	913,075	+ 66,738	15	13,113,446	11,863,678	+ 1,249,768	—	—	—	—	—
	Victoria	4,774	Jan., 1943	1,480,058	+ 169,521	—	—	—	—	—	—	—	—	—

Note. Yields are based on the approximate current prices and are within a fraction of ¼

† Receipts are calculated @ 1s. 6d. to the rupee

Argentine traffics are given in sterling calculated @ 16½ pesos to the £

§ ex dividend